SUPPLEMENT.

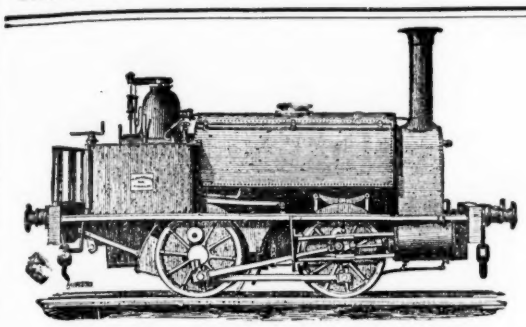
The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

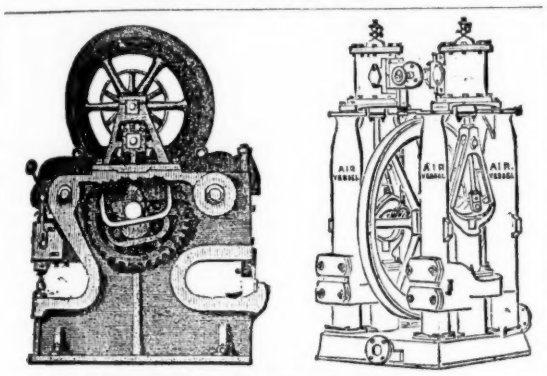
FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[*The* MINING JOURNAL *is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.*]

No. 2030.—VOL. XLIV. LONDON, SATURDAY, JULY 18, 1874. PRICE (WITH THE JOURNAL) SIXPENCE. PER ANNUM, BY POST, £1 4s.



TANK LOCOMOTIVES,
FOR SALE OR HIRE.
HENRY HUGHES AND CO.
LOUGHBOROUGH.



JOHN CAMERON,
MAKER OF
STEAM PUMPS, PORTABLE ENGINES, PLATE BENDING ROLLERS BAR AND ANGLE IRON SHEARS, PUNCHING AND SHEARING MACHINES, PATENTEE OF THE DOUBLE CAM LEVER PUNCHING MACHINE, BAR SHEARS, AND RAIL PUNCHING MACHINES,
EGERTON STREET IRON WORKS,
HULME, MANCHESTER.

BICKFORD'S PATENT SAFETY FUSE,
FOR CONVEYING FIRE TO THE
CHARGE IN BLASTING ROCKS, &c

Obtained the PRIZE MEDALS at the "ROYAL EXHIBITION" of 1851; at the "INTERNATIONAL EXHIBITION" of 1862, in London; at the "IMPERIAL EXPOSITION," held in Paris, in 1855; at the "INTERNATIONAL EXHIBITION," in Dublin, 1865; at the "UNIVERSAL EXPOSITION," in Paris, 1867; at the "GREAT INDUSTRIAL EXHIBITION," at Altona, in 1869; and at the "UNIVERSAL EXHIBITION," Vienna, in 1873.

BICKFORD, SMITH, AND CO., of TUCKINGMILL, CORNWALL; ADELPHI BANK CHAMBERS, SOUTH JOHN-STREET, LIVERPOOL; and 85, GRACECHURCH-STREET, LONDON, E.C., MANUFACTURERS AND ORIGINAL PATENTEES of SAFETY-FUSE, having been informed that the name of their firm has been attached to fuse not of their manufacture, beg to call the attention of the trade and public to the following announcement:—

EVERY COIL of FUSE MANUFACTURED by them has TWO SEPARATE THREADS PASSING THROUGH the COLUMN of GUNPOWDER, and BICKFORD, SMITH, AND CO. CLAIM TWO SUCH SEPARATE THREADS as THEIR TRADE MARK.

For Excellence and Practical Success of Engines — Represented by Model exhibited by this Firm.

HARVEY AND CO.,
ENGINEERS AND GENERAL MERCHANTS,
HAYLE, CORNWALL,
HAYLE FOUNDRY WHARF, NINE ELMS, LONDON,
AND 120, GRESHAM HOUSE, E.C.
MANUFACTURERS OF
PUMPING and other LAND ENGINES and MARINE STEAM ENGINES the largest kind in use, SUGAR MACHINERY, MILLWORK, MINING MACHINERY, and MACHINERY IN GENERAL.
SHIPBUILDERS IN WOOD AND IRON.

SECONDHAND MINING MACHINERY FOR SALE,
IN FIRST-RATE CONDITION, AT MODERATE PRICES.
PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES STEAM CAPSTANS; and CRUSHERS of various sizes. BOILERS, PIT WORK of all descriptions, and all kinds of MATERIALS required for MINING PURPOSES.

THE PATENT PNEUMATIC STAMPS
May be SEEN AT WORK at HAYLE FOUNDRY WHARF, NINE ELMS, by previous application at either of the above addresses.

BENNETTS' SAFETY FUSE WORKS,
ROSKEAR, CAMBORNE, CORNWALL.

BLASTING FUSE FOR MINING AND ENGINEERING PURPOSES,
Suitable for wet or dry ground, and effective in Tropical or Polar Climates.

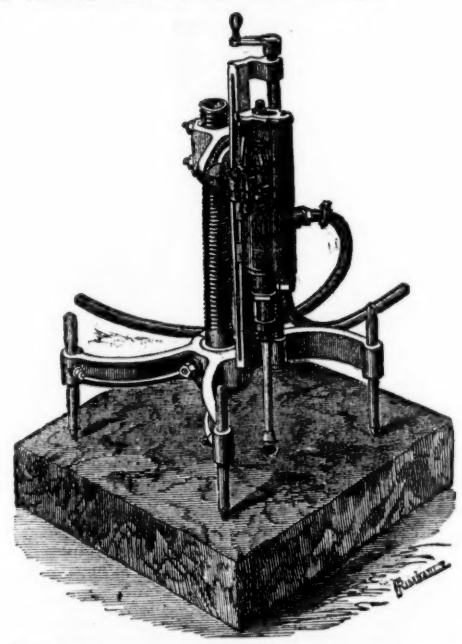
W. BENNETTS, having had many years experience as chief engineer with Messrs. Bickford, Smith, and Co., is now enabled to offer Fuses of every variety of his own manufacture, of best quality, and at moderate prices.
Price Lists and Sample Cards may be had on application at the above address.
LONDON OFFICE,—H. HUGHES, Esq., 85, GRACECHURCH STREET

PARIS. ORDER OF THE CROWN OF PRUSSIA. FALMOUTH.

McKEAN'S ROCK DRILL,
ADAPTED TO EVERY CLASS OF ROCK BORING.

SIXTY MACHINES
FURNISHED FOR THE
ST. GOTHARD TUNNEL OF THE ALPS.

IN USE AT THE ST. JOHN DEL REY MINES, RIO TINTO MINES, TRIESTE HARBOUR WORKS, ALEXANDRIA HARBOUR WORKS, AND IN VARIOUS TUNNELS, MINING AND QUARRY WORKS, DEEPENING RIVER BEDS, STONE-CUTTING AND CONTRACTORS' WORK OF VARIOUS KINDS, WELL-BORING, &c.



McKEAN'S ROCK DRILL has the following ADVANTAGES over ALL other MACHINES, viz.:—

1.—It is the simplest in construction, and contains the fewest parts.
2.—No duplicate parts whatever require to be furnished with machines.
3.—Greater durability, on account of its superior mechanical construction.
4.—It is the most powerful, and runs at greater speed than any other, without liability to derangement or breakage.
5.—Greater facility of manipulation in its adaptation to various kinds of work.

MANUFACTURED FOR McKEAN AND CO. BY
MESSRS. P. AND W. MACLELLAN, "CLUTHA IRONWORKS," GLASGOW;
MESSRS. VARRALL, ELWELL, AND MIDDLETON, AND MESSRS. SAUTTER, LEMONNIER, AND CO., PARIS;
AND E. REMINGTON AND SONS, NEW YORK.

PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL, IRON, AND FLEXIBLE TUBING OF SUPERIOR QUALITIES AND SPECIAL ADAPTATIONS.

McKEAN AND CO.,
ENGINEERS.
OFFICES.
32, LOMBARD STREET, LONDON, E.C.; and
5, RUE SCRIBE, PARIS.
Depot—42 and 43, BOROUGH ROAD, S.E., LONDON.

COPY OF LETTER FROM SIR GEORGE W. DENYS, BART.

Draycott Hall, Richmond, Yorkshire, May 11, 1874.

DEAR SIRS,—Messrs. Jeffryand Nevin, of the Lead Hills Mining Company, came here from Scotland last week to see the borer at work in Sir Francis level. They went back highly pleased with what they saw. The level, which is just now going at £7 per fathom, they stated could not be moved at Lead Hills for less than £15. Five holes, between 6 ft. and 7 ft. deep, had been bored during the shift, and were fired together with 50 charges of dynamite, getting, as you may suppose, a tremendous quantity of stuff, and filling the level right up to the roof.

The old machine has been working first rate since you repaired it, and seems as good as ever. I think you will be hearing from Lead Hills before long, for seeing is believing. You can make any use of this you like.

Messrs. McKean and Co. Yours truly, GEO. W. DENYS.

CONDENSATION OF SMOKE & GASES.

HESLOP, WILSON, AND BUDDEN,
NEWCASTLE-UPON-TYNE.

This PATENT APPARATUS is EXCEEDINGLY SIMPLE and INEXPENSIVE IN CONSTRUCTION, and is so arranged as may seem best for assisting the substances to be operated upon.

AFFORDS TO MANUFACTURERS AND OTHERS PERFECT SAFETY UNDER THE SMOKE AND GASES ACTS.

More effective than condensing towers.

Large chimneys can be done away with. Succeeds thoroughly in condensing ammonia.

UTILISES ALL EMISSIONS.

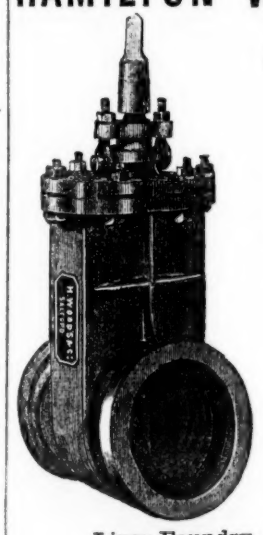
OF GREAT VALUE IN SMELTING WORKS.

The Machine can be seen at work at—
JOHNSON AND HOBBS,
NO. 11, CROSS STREET, MANCHESTER,
Of whom also all particulars can be had.

SOLID DRAWN BRASS BOILER TUBES,
FOR LOCOMOTIVE AND MARINE BOILERS,
EITHER
MUNTZ'S OR GREEN'S PROCESS.
MUNTZ'S METAL COMPANY (LIMITED),
FRENCH WALLS,
NEAR BIRMINGHAM.

MINERS
PRICKERS AND STEMMERS
OF
MUNTZ'S METAL.
ACCORDING TO THE NEW MINES REGULATION ACT.
BEST KNOWN MATERIAL.
MUNTZ'S METAL COMPANY (LIMITED),
FRENCH WALLS,
NEAR BIRMINGHAM.

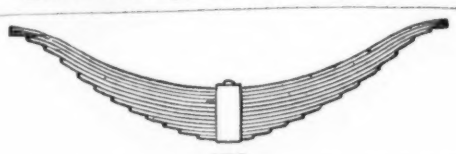
HAMILTON WOODS AND CO.,
MANUFACTURERS OF
SLUICE VALVES
AND
HYDRANTS,
As supplied to
WATERWORKS and LOCAL BOARDS.



SOCKET AND FLANGE VALVES,
up to 12 in., KEPT IN STOCK,
Proved up to 200 lbs. per square inch.

HYDRANTS,
With Gun-Metal Screws, Valves, and Nuts.

BALL HYDRANTS.
AIR VALVES
FOR BLAST FURNACES.
Price Lists on application.
Liver Foundry, Ordsall Lane, Salford.



THE
RAILWAY SPRING COMPANY,
MILLSANDS, SHEFFIELD,
MANUFACTURERS OF EVERY DESCRIPTION OF
RAILWAY SPRINGS.

ROYAL CORNWALL POLYTECHNIC SOCIETY INSTITUTED 1833 FIRST CLASS

T. A. WARRINGTON,

CO-PATENTEE OF "THE POWER-JUMPER," SOLE AND EXCLUSIVE AGENT FOR

THE "KAINOTOMON" ROCK DRILL,

THE CHEAPEST AND BEST MACHINE FOR SINKING, MINING, AND QUARRYING.

"THE ECONOMIC" COAL CUTTER,

FOR SIMPLICITY, ECONOMY, AND EFFICIENCY UNEQUALLED.

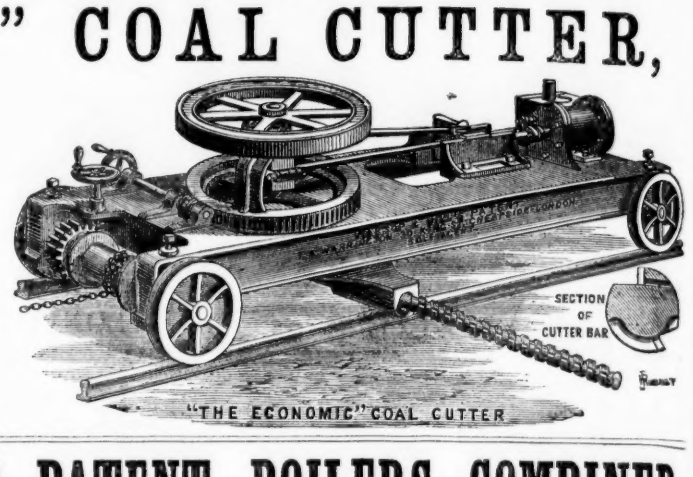
AND SUPERIOR

AIR COMPRESSORS;

ENGINEER AND CONTRACTOR FOR

Mining Machinery of every description.

30, KING STREET, CHEAPSIDE,
LONDON, E.C.



"THE ECONOMIC" COAL CUTTER

IMPROVED VERTICAL STEAM ENGINES AND PATENT BOILERS COMBINED,

The Illustrations show one of ROBEY AND COMPANY'S IMPROVED VERTICAL ENGINES:—

All these ENGINES are supplied with ROBEY AND COMPANY'S NEW PATENT VERTICAL BOILER, as per section illustrated, which has, among others, the following advantages over all VERTICAL BOILERS yet produced:—

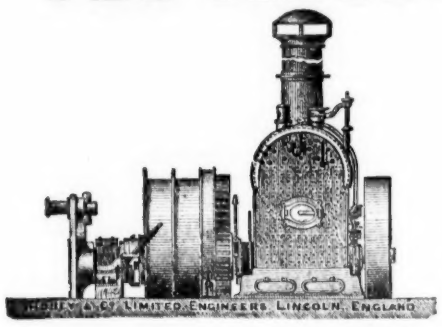
PERFECT CIRCULATION OF THE WATER.

SEPARATION OF THE SEDIMENT.

GREAT DURABILITY.

GREAT ECONOMY IN FUEL.

THE PATENT IMPROVED ROBEY MINING ENGINE.



Some of the advantages of these new Patent Engines are as follows:—

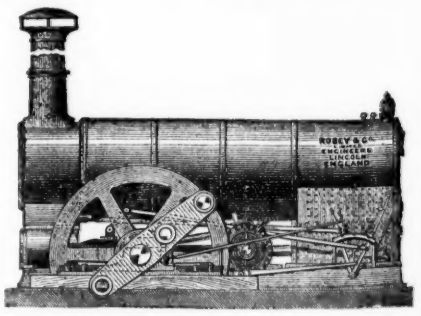
SMALL FIRST COST.

SAVING OF TIME AND EXPENSE IN ERECTING.

EASE, SAFETY, AND ECONOMY IN WORKING.

GREAT SAVING IN FUEL.

This New Patent Mining Engine is free from all the objections that can be urged against using the Semi-Portable Engine for permanent work, because it possesses the rigidity and durability of the Horizontal Engine, and at the same time retains the advantages of the Semi-Portable, in saving time and expense in fixing.



ENGINES UP TO 200 EFFECTIVE HORSE-POWER ALWAYS IN PROGRESS.

Prices and full particulars on application to the sole manufacturers:—

ROBEY AND COMPANY, LIMITED,
PERSEVERANCE IRONWORKS, LINCOLN, ENGLAND.

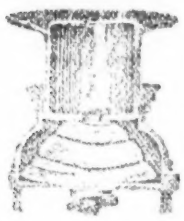
DUNN'S ROCK DRILL,

FOR DRIVING BED-ROCK TUNNELS, SINKING SHAFTS, and PERFORMING OPEN-FIELD OPERATIONS,

IS THE CHEAPEST, SIMPLEST, STRONGEST, AND MOST EFFECTIVE DRILL IN THE WORLD.

OFFICE,—193, GOSWELL ROAD (near Spencer-street), CLERKENWELL, LONDON, E.C.

THOMAS TURTON AND SONS,



MANUFACTURERS OF

CAST STEEL for PUNCHES, TAPS, and DIES, TURNING TOOLS, CHISELS, &c.

CAST STEEL PISTON RODS, CRANK PINS, CONNECTING RODS, STRAIGHT and CRANK AXLES, SHAFTS &c.

FORGINGS of EVERY DESCRIPTION.

DOUBLESHEARSTEEL, BLISTER STEEL, SPRING STEEL, GERMAN STEEL, FILES MARKED T. TURTON EDGE TOOLS MARKED WM. GREAVES & SON

Locomotive Engine, Railway Carriage and Wagon Springs and Buffers.

SHEAF WORKS AND SPRING WORKS, SHEFFIELD.

LONDON WAREHOUSE, 35, QUEEN STREET, CANNON STREET, CITY, E.C.

Where the largest stock of steel, files, tools, &c., may be selected from.

GUIDE TO INVESTMENTS.

Published monthly. Post free.

SPARGO'S "GUIDE TO INVESTMENTS" affords information (ample and correct) of all the best-paying investments. Capitalists and men of business should consult the "Guide" for reliable and valuable intelligence. THOMAS SPARGO,

Queen's Buildings, Queen Victoria-street, Mansion House, London, E.C.

Established Twenty-six Years.

MINES AND MINING.

Now in the Press, and will shortly be issued.

SPARGO'S ANNUAL STATISTICS AND OBSERVATIONS ON THE MINES OF CORNWALL, DEVON, AND WALES.

The work will contain particulars of all the important mines in the counties referred to, and will be illustrated by maps and sections of the various districts, forming a complete Guide to Mining Investors.

Price 3s. 6d.; by post 3s. 8d.

To secure an early copy subscribers are requested to forward their application as early as possible. Only a limited number will be issued.

Queen's Buildings, Queen Victoria-street, Mansion House, London, E.C.

Messrs. WERTHEIMER and LEE, 1½, Finsbury Circus, London, E.C.

PORTABLE,

Semi-Portable

AND

FIXED

ENGINES.

VERTICAL

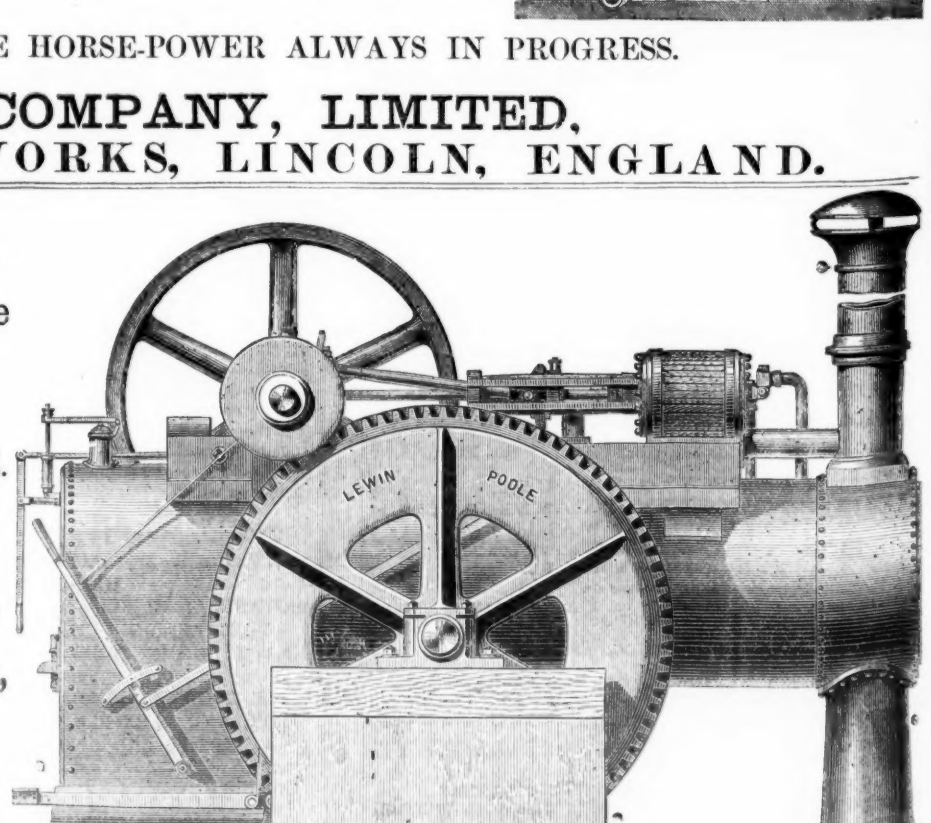
ENGINES,

Mortar Mills,

AND

Circular

Saw Benches.



WINDING AND PUMPING GEAR.

For catalogues and particulars, apply

S. LEWIN, POOLE, DORSET.

Original Correspondence.

COAL MINING IN ITALY.

By P. LE NEVE FOSTER, Jun., Chevallier of the Order of the Corona d'Italia.

The astonishing increase in the consumption of coal within the last few years in Italy has led capitalists to turn their attention to the working of some of the numerous deposits of mineral fuel in that country, and more especially in the Tuscan Maremma.

It has been stated by many eminent authorities that no true coal can be found in Italy, and this statement up to a certain point is correct, admitting that the term of "true coal" should only be given to that found in the true carboniferous formation of the Palæozoic period, in contradistinction to "lignite," which by some people has been applied indiscriminately to coal of later geological periods, without regard to their true character or commercial value. I maintain that this title has in many cases been misapplied, and that the term of lignite should only be given to imperfectly carbonised matter, presenting the appearance of undecomposed wood, and not to substances which, although met with in the Tertiary formation, possess all the characteristics of true coal. One of the great drawbacks to the extensive utilisation of these sources of riches in the Maremma has been in this ill-chosen title, and this name, which in the minds of the general public signifies an inferior article, has very greatly prejudiced the sale of a coal which, if not equal to the best Newcastle coal, is certainly superior to many qualities of Scotch and Welsh coal.

The coal deposits in the Tuscan Maremma appear to have had one common origin in the middle of the Tertiary series (Miocene), and at that period of the earth's history probably formed one immense unbroken coal field, extending from Monte Bamboli and Monte Rufoli on the North, to the Roman frontier at Pitigliano on the south, and towards Siena on the east.

At some later period, though probably before the close of the Miocene period, a violent upheaval, caused by the intrusion of igneous rocks, took place, throwing up the superincumbent strata in all directions, and in many places bursting through the earth's crust. The nucleus of this eruption appears to have been at Sasso Forte, where the lofty and rugged trachytic mountain of that name bears testimony to the violence of volcanic agency at that time; and at Rocca Tederighi, Rocca Strada, Monte Massi, and numerous other places, the trachytic rock may be seen towering above the surrounding hills, and giving a character of wildness of its own to the scenery.

Further removed from the centre of action this igneous rock instead of bursting through, only raised the upper strata here and there, forming a series of hills and undulating country, and it is, therefore, here that the coal seams will be found of greater extent, and with fewer faults, than in the immediate neighbourhood of the trachytic eruption. The violent upheaval, together with the action of denudation in latter times, has without doubt been the cause of the breaking up of the great coal field of the Maremma into a series of smaller basins. It is to the action of heat from the intrusion of the igneous rocks that the perfect mineralisation of the vegetable matter may be attributed, and that which under ordinary circumstances would have required a far longer time to bring about, and would only have been complete in the older Palæozoic formation, we find here accomplished in the Tertiary series.

One of the most important of the coal basins of the Maremma is that of Casteani, situate to the south-east of the town of Massa Marritima, at the foot of an extensive range of hills and mountains, which form a vast amphitheatre, enclosing a large extent of plain, and advantage was taken in former times of this circumstance, and under the Republic of Siena a massive wall in masonry was thrown across the narrow outlet between the hills, for the purpose of retaining the waters to form a vast artificial lake for supplying the city with fish. The ruins of this wall may still be seen. On the south, and situated on the summit of a rugged mass of rock, is the now dismantled castle of Pietra, celebrated by Dante as the prison of the unfortunate Pia de' Tolomei.

The mines of Casteani are, perhaps, the most important that are at present worked in Italy, and are owned by Seignor Luigi Ferrari-Corbelli. This estate occupies an area of upwards of 4000 English acres, in the north-eastern portion of the above-mentioned plain. The coal is found in two seams, entirely in the clay; the upper one averages 6 meters in thickness, and is separated from the lower seam, which varies from 0·80 to 1 meter in thickness, by a layer 8 meters in depth of clay, in which are met with no fewer than 7 or 8 seams of coal, of a few centimeters only in thickness each. The dip is 25° to 30°. The coal of the upper seam alone is worked at Casteani, and consists of about 50 centimeters in depth of shaley coal of inferior quality, which until the present time has not been saleable, although without doubt it will in future find a market for the burning of bricks, &c. Next follows about 50 centimeters of good coal of first quality, then 1·50 centimeter of coal of fair quality but not so compact, it is sold as second quality, and is succeeded by 2·50 centimeters of coal of best quality, on a bed 50 centimeters in thickness of inferior shale coal, similar to that of the roof.

Owing to the great thickness of the seam, and the pressure of the upper and lower beds of clay, it is found necessary (in order to excavate the whole of the coal) to carry forward the workings in three distinct layers, taking out the bottom portion for a depth of 2 meters first, and after filling up the space that was occupied by the coal with earth, the middle, 2 meters in depth, is taken out, and hence the loss. The earth for filling in is brought from the "Mulinello," as the place is called where the earth is allowed to fall in for that purpose. The mode of working these mines is shown at Fig. 1, and the "Mulinello" at Fig. 2.

FIG. 1.

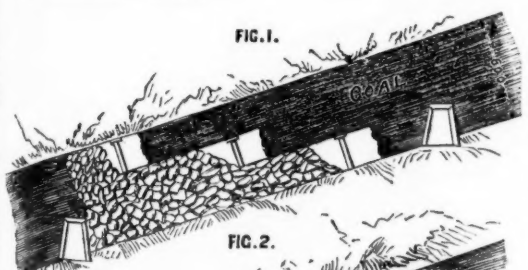
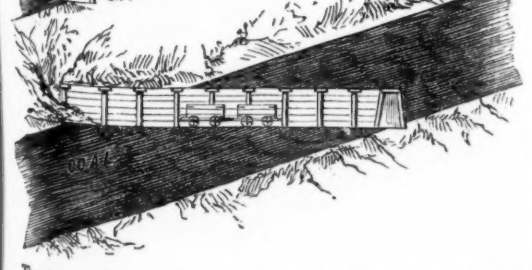


FIG. 2.



The getting of the coal is carried on by piece-work, the miners being paid at the rate of 2 fr. per ton for that of the inferior quality, 2·30 fr. per ton for the second quality, and 3 fr. per ton for the best, or on the average 2·50 fr. per ton. This includes the filling in and conveyance underground to the bottom of the shaft, but not the timbering, driving of levels, and other works. The rate of wages at these mines for day-work is—carpenters, blacksmiths, timbermen, &c., from 70 to 80 fr. per month; miners, from 1·70 to 2 fr. per day; and labourers, 1·50 to 1·70 fr. per day.

At the Casteani there are three shafts and two inclined planes. The principal shaft (Il Pozzo Teodore), sunk to the dip, is about 100 meters in depth, and in this the greater part of the coal is raised to the surface. This pit is provided with cages and winding gear, worked by a double-cylinder high-pressure horizontal engine; the other pits serve only for ventilation, and are provided with ladders for the ascent and descent of the men. One of the inclined planes is 57 meters in depth, and is also used for raising the coal from the upper levels, the winding gear being driven by a portable engine. The annual output of these mines averages 20,000 tons, and the coal is sent chiefly by rail to Leghorn and Rome from the Potassa Station, which is about 5 miles distant from the mines. The price of the coal at the pit's mouth is 16 francs per ton for the first quality and 12 francs for the second, and delivered at the railway station 5 fr. extra per ton is charged. The number of men employed at these mines is about 225, of whom 180 are engaged underground. The miners are lighted at their work by open oil lamps, but in some parts of the mines, especially where the ventilation is bad, and there is danger from explosive gases, the safety-lamp is used, and each workman is supplied with printed regulations for using these lamps, and testing the presence of gas in the mines.

There is not the slightest doubt that these mines are not worked to the extent that they are capable of, and that in the hands of an energetic company ten times the quantity of coal could easily be raised. Close to the eastern mines a French Company are sinking a pit on a small property called Casa Vecchia: this pit has now reached a depth of 90 meters through the blue Tertiary clays and beds of hard conglomerate, and from the appearance of the strata that have now been reached there is every probability that coal will be met with shortly.

To the north of these mines, on the Perolla estate, borings were made last year, and a small seam found at a short depth below the surface. A search for coal has also been made at Pietra (a large estate, occupying the whole of the south and south-eastern portion of the plain in which are situated the above-mentioned mines) by a society of English capitalists, and an inclined gallery was driven to a depth of 50 meters, following the exact dip of a seam, the outcrop of which was found on the side of a small hill called the Petrajo, and there is every probability that when this gallery has been sunk to a greater depth, and below the level of the stratum, that the undertaking will be rewarded with success, and that a thick seam will be met with. Several important outcrops of coal are found in the plain to the south of the village of Monte Massi. One of these outcrops in the bed of the torrent Follonica is 6 meters in thickness. Several pits have been sunk to prove the existence of coal on the right and left banks of this torrent, those on the right, at a spot called Casetta Papi, belonging to Signor Ferrari-Corbelli, being in a position to yield 50 tons per day, did the state of the roads permit the coal being transported to the railway at moderate cost. About 1½ mile further east other pits were sunk many years ago at a place called Peggio Moreito, but as yet these mines have not been worked to any extent.

An English company (Sasso Forte Collieries Company, Limited) was formed last year to work some extensive coal deposits at the Acqua Nera, near the little village of Sassofortino, and they purpose shortly to construct a railway from the mines to the station of Roccastrada, a distance of about 15 miles. The coal got from these mines is one of the best in quality in Italy, commands a high price, and finds a ready sale in Leghorn.

An Italian company have lately commenced working some mines near Murlo, a small village about 15 miles from Siena, and are now completing a railway, 13½ miles in length, to the railway station of Monte Antico.

There are numerous other deposits of coal in the valley of the Ombrone, towards Monte Amiato, and only require an energetic company to develope them. Amongst these may be mentioned the discovery of coal at Bacinello (about 15 miles from Grosseto), where the outcrop of a seam, 2 meters in thickness, has been laid bare by the action of a torrent. Coal has also been found at Acqua Salata, Val di Nebbia near Paganier, Val di Catabbio near the Roman frontier, and traces of the carboniferous strata are met with at many other places.

In conclusion, there seems to be no doubt that coal mining in Italy will become a most profitable undertaking in the hands of English capitalists, and if proper care is taken in the selection and purchase of mining properties, and in their judicious management afterwards, the mines of the Maremma will yield abundant returns for the money invested in them. P. LE NEVE FOSTER, Jun.,
Roccastrada, June 30. Engineer.

SULPHUR IN SICILY.

SIR,—Referring to the paragraph in last week's Journal, headed "Sulphur in Sicily," in which it was stated that Signor Parodi had "estimated that the sulphur in Sicily will be exhausted in from 50 to 60 years," will you permit me to say that, having inspected very many sulphur mines in the island, visited most of the sulphur districts, and been engaged for some years in directing the working of sulphur mines there, I am of opinion that the estimate of Signor Parodi is at least doubtful. With very few exceptions, the ore is carried to the surface on the backs of boys, two to four of whom accompany each miner, and it is a well-known fact that the produce of a mine in Sicily is chiefly determined by the difficulty of getting boys. Moreover, as each boy carries a small load only, and makes several journeys per day up and down the difficult headings and shafts, the mines soon reach a depth at which they cease to be profitably worked. This depth is in practice found to be about 400 feet, below which winding machinery is needed for hauling the ore to the surface, but has hitherto scarcely been tried. All the sulphur in the island, therefore, below 400 feet is almost untouched. That this quantity may be considerable must be inferred from the fact that many of the beds of ore are nearly vertical, and improve as they descend. I have the greatest respect for the opinion of Signor Parodi, who has done more than anyone to record the facts as to the existing state of the sulphur industry, but I am confident that the data are insufficient on which to form an estimate limiting the duration of the field to 50 or 60 years. W. SHELFORD.
Westminster Chambers, July 14.

NOVA SCOTIA ITEMS.

SIR,—Subjoined we beg to hand you extracts from our Nova Scotia correspondence, which will probably have an interest for your readers.—*London, July 14.* THE CANADIAN MINES BUREAU.

Our Halifax correspondent, under date June 27, writes:—"We are having a great deal of cold wet weather this month, which has retarded out-door operations considerably, but gold mining is looking up a little in this Province in spite of opposition and prejudice. Messrs. Touquoy and Caffery are both at work at Caribou, and the Pioneer claims there are expected to be opened again this summer, and add to the monthly yield from that district.

Coal mining is very dull at present, on account of the deferred action in regard to the Reciprocity Treaty. Many collieries are discharging their hands, especially those in Cape Breton. A number of Cornish miners arrived by last steamer for the Steel Company of Canada, whose works are at Londonderry, and who are still advertising for more hands. The gold mines, too, would give steady employment to a hundred or more skilled miners.

The Shelburne Granite Quarry, leased to Mr. THOMAS ROBERTSON, is being opened by American capitalists, and the first cargo will be shipped this week. If suitable for the New York market, and contracts can be secured at paying prices, work on the property will be pushed rapidly forward, and a considerable quantity of stone shipped before the close of the season."

Our Sherbrooke correspondent, under date June 19, writes:—"Since my last letter, of June 12, the Wellington Company have crushed 56 tons of quartz, which produced 98 ozs. Mr. FRANCIS ZWICKEL, M.E., representing the New York and Sherbrooke Company, is erecting an engine on the Sutherland lode, and will begin to sink on it shortly.

Capt. JAS. WARREN is sinking a new shaft on the Stryker lode on the Excelsior Mine, east of the old workings. This will be the second shaft Capt. Warren will have opened on the Stryker lode since he has had the property on tribute. It has been very wet all this month, so that little prospecting has been done, consequently nothing new discovered; but the weather appears to be more settled now, and surface work will be revived, when we may expect to find other new and good lodes. In the hand-to-mouth way the mines are being worked now it is a wonder they give any profit at all, and much credit is due to the tributers through whose enterprise the district was saved from being abandoned."

Our Tangier correspondent, under date June 17, writes:—"The property worked by Mr. JOHN C. ROSS is opening up well. It shows gold better than ever. Three men took out $150 worth of gold, in specimens, in one day. The quartz has not been broken up yet, but remains just as it was taken out of the level. Gold shows on the face of the lode for a distance of about 45 feet. It has shown more gold on the length opened than any other property discovered in the district."

MINING IN NEVADA—THE GREAT COMSTOCK RANGE.

SIR,—As I consider that it may interest some of the readers of your valuable Journal to have a slight description of the Great Comstock Range, which at the present time appears to be creating more interest amongst the mining capitalists of Great Britain than at any previous period during its history, I take the liberty of making the few following remarks on its position, developments, and future prospects. Undoubtedly there are two important reasons that tend to call the attention of capitalists to this region at present—the unparalleled richness of these mines, and the driving of the Sutro Tunnel, the latter being a piece of mining engineering calculated, when completed, to accomplish results without a parallel in the history of mining.

This great mineral belt was discovered in 1859, and has been generally known and designated as the Comstock Lode. The metal-bearing formation is a huge belt of porphyry or propholite, and, as far as developed, appears to be from 3000 to 4000 feet in width, the western extremity of which is bounded by a range of syenite mountains, rising abruptly to an elevation of from 600 to 1400 feet above the apex of the mineral belt. The belt has been traced for a distance of about 2 miles from north to south, its main course being about 15° east of south and west of north, true meridian. What is known as the Comstock Lode was first located near the western extremity of this belt, which is the west wall. The apex of several chimneys, or bonanzas, appeared with great strength on the surface, some of them containing rich sulphuret and chloride silver ores, together with a heavy percentage of gold. These ore bodies were plainly visible on the surface when the lead was first discovered, such as in the Ophir, Gould and Curry, Chollar-Potosi, and the mines further south known as the Gold Hill Mines.

Locators at the commencement followed the base of the West Syenite Mountains, and located for a distance of over 2 miles, keeping close to the base of the mountains and locating wherever a chimney of croppings appeared, and sunk shafts and drove tunnels innumerable, with the various results incidental to a new mining district. This chain of mountains does not altogether take the course beforementioned, but still the prospectors kept close to its base. More recent developments have shown that what was located as the Comstock lead was simply the outspurts of the several bonanzas that had been formed on the western extremity of this great mineral belt. The chimneys on which the various locations were made, from 1859 till 1862, invariably pitched west at an angle of about 45°. After this time parties commenced to make locations further east, and recent developments have shown that there are several other leads or chimneys lying to the east of the early locations, all of which invariably pitch east from the surface, and in numerous instances are distinctly visible; however, but little or no work has been done on them. This belt of porphyry is overlapped to the east by a belt of trachyte turfa, or volcanic lava, running parallel to the metal-bearing belt. Unlike any other lode I have ever seen in my travels, this mineral belt, known as the Comstock Range, does not carry any defined wall. The nearest approach to a wall is, as already stated, on the west, when it lies on the Syenite Mountains. The ore bodies are found in a series of chimneys, or bonanzas, and when discovered resemble in appearance the shape of a whale-boat; they commence from nothing, or a mere seam, and widen out in the centre, at times attaining a width of over 200 feet, the whole mass being ore that produces from $60 to $80 per ton by simple mill process; the process which is in use here does not save more than from 65 to 70 per cent of the assay value of the ore.

Since the discovery of the lead, in 1859, the mines have produced about $200,000,000 in gold and silver. This enormous amount has been extracted from about eight of the bonanzas, or chimneys, already referred to, all ranging within a distance of about 7000 feet from north to south. A still greater number of chimneys lie to the east within this belt, and parallel with the bonanzas that have produced the sum above mentioned, which have every appearance of yielding as much, or more, if the necessary capital was forthcoming; but from the commencement of work on those mines prospecting and developing have been seriously retarded by what is known here as the one-lead theory. All the mines are under the control of three or four companies, the most prominent of which is the Union Mill and Mining Company, which to all intents and purposes is the Bank of California. It is in the interests of this company, as well as others controlling the mines, to maintain this one-lead theory, and they have squandered millions of dollars in bribing witnesses, mining experts, and juries for this purpose; consequently, capitalists have been deterred from investing their money in developing the chimneys lying to the east, the companies now controlling the mines claiming that there is but one lead, which decision they have bought from the District Courts in this county. As far as I am aware, appeal to Washington has been made in one instance only, on which occasion the one-lead theory was defeated, and I have not the slightest doubt but that all other suits would follow in the same course if appealed.

Congress, in 1872, passed a general mining law, applicable to all the States and Territories in the Union, which is more liberal on the side of new locations than any local mining law in existence, and allows one or more parties, citizens of the United States, to locate for a distance along the line of any mineral-bearing vein 1500 ft. in length and 600 ft. in width, the latter for mining purposes—*i.e.*, 300 ft. on each side of the apex of the vein, but the law further declares that the apex of the vein must be found within the prescribed lines; the local mining laws in no instance allowing more than 100 feet on each side of the apex, and in some cases not more than 25 ft., whilst the existing companies here claim from 1500 to 2000 ft. from their west to their east posts, and are still clamouring for a further extension to the east. Now, the local mining laws, as well as those of Congress, permit the locator to claim all dips, spurs, angles, and variations, which simply means that if the apex of your lead appears on the surface within the lines prescribed on the location notice, and inclines either to the east or west, it can be followed down to an indefinite depth, but these laws do not appear to satisfy the parties controlling these mines.

In 1866 Mr. Adolph Sutro obtained a charter from the U.S. Government for the construction of a tunnel, commencing at a point about 22,000 ft. east of what was then known as the Comstock lead, and was calculated to tap the same at a vertical depth of 2000 feet. He also obtained a contract from the parties then controlling these mines, for a stipulated sum in the shape of royalty when this tunnel was completed. This royalty was to be guaranteed to Mr. Sutro by a clause inserted in the documents that conveyed a United States title, by patent, to these mines from the United States Government, but recent developments in some of the best paying mines along the line have shown that their richest deposits lie to the east of the ground first located. Mr. Sutro has a stipulated right to anything that he may discover lying to the east of the prior locations for a great distance on each side of his tunnel. It is causing a great amount of bad feeling and animosity between the Sutro Tunnel Company and the mineowners, the latter having, in some instances, refused patents when offered them with Mr. Sutro's claims embodied therein, but I do not see why any objections these companies may raise should deter capital from being invested in this great tunnel enterprise.

Several of the mines having already attained a depth of 2000 feet, and the fact demonstrated that none but the very richest deposits

of ore can be worked at a profit at this depth without the aid of the Sutro Tunnel, I think that capital economically invested in this enterprise would bear immeasurably greater interest than any foreign capital invested in mines on this Coast. We have three mines here at present paying collectively $1,300,000 per month in dividends, and they have every appearance of continuing to do so for an indefinite period. This, together with the almost certain developments which will be made in the eastern portion of the aforesaid belt of porphyry, when the Sutro Tunnel is completed, I think a safe guarantee for the investment of such capital necessary to complete the work. MINING ENGINEER.

Virginia City, Storey County, Nevada, June 21.

THE IRON MINES OF CORNWALL.

SIR,—Perhaps an account of a visit I paid to the mines of the Cornish Consolidated Iron Mines Corporation, a few days since, may interest some of your readers. By the kindness of Mr. Roebuck, of Trevarthian, the presiding genius of this enterprise, I formed one of a small party to go over the length of the Cornwall Minerals Railway, and visit the iron mines. We started with a train of empty ore trucks from Par Station, at the sea level, where the railway company have shops, &c., that would not disgrace the Midland or Great Western Railways, and were soon informed by the sharp hard beat of the locomotive that we were ascending a heavy gradient. We presently gained an altitude of 800 to 1000 feet from our starting level, and had passed through the beautiful valley of Luxulyan, where for a moment we forget iron ore and china-clay in admiration of the lovely scenery by which we are surrounded. The valley is beautifully wooded, huge boulders of grey granite peep through masses of crimson foxgloves and luxuriant ferns, and a lovely waterfall, visible in places through the trees, falls nearly the whole height of one side of the valley. At this elevation we pass through a district abounding in china-clay, which promises to become a very important item in the traffic returns of the Cornwall Minerals Railway, and is, we understand, a very lucrative article of commerce. We come upon a table land of splendid agricultural country, to which this railway must furnish a most important outlet for the produce, and soon become aware then, by a peculiar glimmer in the horizon, that we are approaching the sea—not the sea we left in the morning, which was the English Channel, but the Atlantic Ocean, which is soon visible over a dip in the high land in the direction of New Quay.

Leaving the branch to New Quay on our right, we rattle merrily along past deserted tin mines, till the signs of activity all around us tell plainly that we have reached the iron mining district, and presently we are told the engine can take us no further, so we dismount from our truck, and climb the steep incline by which the iron ore from Gravel Hill will be brought to the railway by a tramway and wire-rope incline. Arrived at the top we are glad to rest a moment, for the July sun in Cornwall is very hot about noon, and the way is deep in sea-weed, but we have a splendid prospect in front of us. We are a little to the west of Perran Head, with a magnificent sweep of bay in front of us, and sand so white and sea so blue is surely never seen except in Cornwall, though we have heard the Bay of Naples mentioned. The scene is one of perfect solitude—no more sign of life or human habitation apparently than when King Arthur was washed on shore—"a little naked child"—somewhere not far from this. There are some people at work, however, not far off, as we shall see shortly. We plunge down the soft sand hill to the beach, and, turning sharp to the right, soon come under a lofty cliff, and are surprised to find huge piles of iron of many thousand tons lying on the beach, and, approaching the cliff, we find boldly marked on the face of it the "Great Perran Lode" of iron ore, which is, we imagine, destined to astonish the minds even of those accustomed to the wonders of Cleveland and Barrow-in-Furness. The ore we have just seen is of splendid quality—rich brown hematite and the white spathose or carbonate of iron, richly impregnated with manganese—and highly suitable for spiegeleisen or Bessemer pig-iron.

The lode on the face of the cliff is about 100 ft. in width, and has been exposed to a depth of 250 ft. Here the men are working level drifts a little above high-water mark, and many thousand tons have been brought over. About 180 fms. from the cliff a shaft has been sunk which meets the adit. There, also, large quantities of ore of the same description have been brought to bank. A little further on is Treamble Mine, which is worked as an open quarry, the lode coming near the surface; there, also, large quantities of brown hematite and spathose ores have been worked, and are ready to send away. Several other shafts have been sunk, always finding the lode under the same conditions, and the ore, both of hematite and spathose, of remarkable uniformity; but, not to weary with a description of them all, it will be sufficient to say that at Duchy Peru, three miles from the sea, where the lode is first entered from the cliff, the shaft has now been sunk 80 fms. through the lode without coming to an end of the spathose ore, which it is believed will be found to be more than double this depth; and, as the lode here gives a width of from 40 to 50 ft. of pure ore, and a cubic fathom of the ore weighs about 16 tons, which gives 128 tons for every fathom of depth of the lode, those who are fond of figures can easily ascertain what amount in tons the lode already proved for three miles contains. The spathose ore is being calcined in open clamps at the mouth of the several shafts, and kilns are being erected on an extensive scale for the same purpose, it being found advisable to calcine the spathose on the spot.

The result of a vast number of analyses gives the following:—

BROWN HEMATITE.

Protoxide iron	3·210
Peroxide iron	75·996
Oxide manganese	Trace.
Alumina	1·660
Lime	1·338
Magnesia	0·140
Silica	6·172
Sulphur	0·024
Phosphoric acid	Trace.
Water, 10·900; alkalies, 0·560	11·460 = 100·000
Metallic iron	54·700

SPATHOSE ORE, OR CARBONATE OF IRON.

Protoxide iron	6·425
Peroxide iron	78·710
Oxide manganese	4·127
Alumina	0·752
Lime	2·520
Magnesia	2·450
Silica	6·112
Sulphur	0·062
Phosphoric acid	0·013
Carbonic acid	Trace.
Carbonaceous matter	0·150
Alkalies (traces)	0·479 = 100·000
Yield—Metallic iron 64·600	
Manganese 4·127 = 58·627	

Having seen the whole of the mines now at work on the three miles of lode at present opened, we rejoined our engine, and with a train of iron ore and china-clay set off on the return journey; our locomotive, a very fine one of Sharp, Stewart, and Co.'s, with six wheels coupled, requiring all its power up some of the heavy gradients, and taking us down to Par Station at a rattling pace as soon as we began to descend from the high elevation mentioned in the morning. An hour of daylight still remained when we reached Par, and we were told our survey would be incomplete if we did not go into Fowey, which is to be the principal port of shipment for the Minerals Railway. We had again to ascend a considerable elevation through charming country, and to pass through a tunnel ¾ mile in length, and then we ran rapidly down to Fowey. Some of your readers will probably be surprised to learn that this little-known port is one of the finest harbours in the kingdom; the Great Eastern could run into its sheltered bay and swing afloat at her anchor, at low water, with 40 to 50 ft. water under her keel; and we saw at one of the company's mineral stages a steamer of 1800 tons burthen lying afloat taking in her cargo. Everything here is on the same complete and magnificent scale which characterises all the works of the railway; hydraulic tips, steam cranes, and all the best modern appliances for rapid loading and discharging are here employed, and they will all be required, as the Mines' Corporation alone will load a minimum of 1000 tons per diem. As a small instance of the facilities for the shipment, most of the trucks of china-clay we had brought with us were discharged into a vessel before we had finished our hasty glance round at the harbour. We had now fairly expended the long summer day, and got back to Par again just in time to catch the last train to Plymouth.

It will be seen from this hasty sketch that this iron-mining enterprise has a great future before it. With a practically unlimited quantity of ore of the finest quality, very cheaply worked and conveyed, this ore can compete successfully with any in the market, especially with the Spanish ores, some of which are very similar to Cornwall ores, but are wasted with the heavy cost of carriage from Spain. The spathos ore will be a speciality in this country, and, from its richness and purity, will command a high price for steel-making purposes, and must be extremely lucrative. The Corporation have been extremely fortunate in obtaining the assistance of the Minerals Railway Company, which has expended upwards of 1,000,000*l.* of capital, and laid down 50 to 60 miles of railway devoted to the development of the mines, and adds so much to their value. They have also a splendid port, where steamers of the largest size can enter and leave at all times of tide, and the mineowners are confident they can vend their ores at a profit, and compete successfully with ore of equal quality from any part of the world.

Too much praise can hardly be given to the energy and ability with which both these enterprises, the mines and the railway, have been carried out. In scarcely two years from the commencement the mines have been developed; the railway, through a very difficult country, has been constructed in a most efficient and substantial manner, and the Mines Corporation are now shipping their ore at Fowey at the rate of 1000 tons per diem. Cornwall, hitherto only known to metallurgists as yielding tin and copper, may now fairly take rank as an iron-producing district with Cleveland and Barrow-in-Furness, with the quantity of one and the quality of the other.

—Iron and Coal Trades Review.

CORNISH MINING.

SIR,—I observe two of your correspondents, in the Supplement to last week's Journal, have been dealing with the above subject, and while one has taken up the lamentation that Cornish mining will not pay, and made the statement that it has been proved over and over again that it is utterly unremunerative (the proofs, I think, have only existed in his own lugubrious imagination), the other has told us that shafts are sunk in American mines at a rate unheard of in Cornwall, and, though stating that no machine has yet been invented that offers the requisite economy and efficiency, goes on to recommend their use, without stopping to tell us the reason why shafts can be sunk so much faster (and I shall presume, from his remarks, cheaper) in America. Now, far be it from me to utter a syllable against the use of boring machines; on the contrary, I am inclined to think that it is the pertinacity with which we cling to our old course of working that is proving the ruin of our mining. We find that in almost any part of the globe mining can be done with much greater dispatch than it can in Cornwall. And why is it so? Because they have got away from the old Cornish system, and leave it to pay men in accordance with the amount of work they actually accomplish, and keep proper supervision over them. See the statement made not long since in your Journal of the feat in shaft sinking accomplished in the St. John del Rey Mines, in Brazil, and contrast it with that put forth by your correspondent as the results obtained in one of the best managed mines in the county. We may be told that depth and excessive heat, and what not, are against the Cornish mine, but surely in these days of scientific achievements these can offer no insurmountable obstacles. Some time since, being anxious to know how it was that in the American mines work could be accomplished so much faster than at home, I asked an intelligent miner who had been across the Atlantic what reason he could assign for it, and he said, "When in Washoe I worked in a sinking pit for a considerable time. We were four in each shift of eight hours, and were supposed to work the whole of the time, with the exception of half-an-hour for crib, and were taken up and down the shaft in the cage. The boss frequently visited us; he came down the shaft by the same means as we did, and we knew not until the moment he was upon us when he was coming; and if when he came he found either of the men idle he was ordered to the office to get paid up immediately. Our wages were good, although there were always a great number of men waiting for employment." From this I concluded it was the amount of work done by the miners that made the difference. But if we only draw comparisons at home we shall find quite as great a difference exists. For instance, in Wheal Kitty, with the average value of the ground laid open (as reported) being about 10*l.* per fathom, a regular profit is made, while in another mine (Wheal Coates) in the same district, with ground reported of greater value, the loss is equal to two-thirds of the total costs; and both Tincroft and Carn Brea were, I believe, losing concerns when taken in hand by the manager of Wheal Kitty. And what does this point to, but that with better management we should have a great many more paying mines. Indeed, I think I can see in improved management a better cure for the evils of which "L." complains than the amputation of all those now unhealthy limbs. It is, however, to be regretted that there are so many parasites to live and flourish on mining. These, too, are the men who have generally the real management of many of our mines, and those who have the mine are but tools kept to do their bidding, and who are safe to keep their position as long as they can make a flourishing report. Hence it is that we see so little done to improve our mechanical appliances for saving manual labour, and the lax attention there is paid to the supervision of the men. Our forefathers lived and rejoiced with tin at 40*l.* per ton, and surely we are not so far degenerated as not to be able to produce it for 60*l.* And if the managers of the present day had to trust to the resources of our mines instead of to the ease or otherwise with which money can be obtained from the pockets of a confiding public, to the great profit of those who perform the process of extraction, I am inclined to think we should not be again treated with an invitation from "L." to close up our mines. MINER.

July 14.

DIVIDEND AND PROGRESSIVE MINES.

SIR,—I append the names of 30 dividend mines inserted in your valuable Journal at the close of 1856. At that date the standard for copper ores stood at 140*l.* to a produce of 7⅛, and black tin was very close on the ruling quotations of to-day. To purchase a share in each of these 30 mines would then absorb 4323*l.*, while the dividends for that year were 665*l.*, yielding an average of 15⅜ per cent. Of these 30 mines, only three continue to pay dividends during the first half of the current year—Dolcoath, South Caradon, and Tincroft. At the close of 1856 Dolcoath sold for 210*l.* per 179th share; the price is now 46*l.* and 48*l.* per 4206th share. The dividends for 1856 were 1⅞ below the average of the whole 30 mines. The dividends for the first half of 1874 have been 2148*l.*; for 1873, 13,962*l.*; for 1872, 45,645*l.*; and for the 17½ years ending June 30 last, about 287,000*l.*, or (say) sevenfold the market value of 1856, and just 43½ per cent. above the market value of to day, 200,000*l.* Thus investors will receive, at ruling quotations of shares, 8 1-5th per cent., should Dolcoath continue to declare the same dividends over the ensuing 17½ years that have accrued from the past 17½ years. South Caradon has yielded dividends of 490*l.* a share—say, 250,880*l.*—closely approximating on Dolcoath for the like period. The average yearly interest for the 17½ years was 28*l.* a share, or 16 per cent. on the market value at the close of 1856 (180*l.*) The price is now 60*l.* per divided share, although in the interim quotations ran as high as 450*l.* to 460*l.*; yet, like almost every other dividend mine, commanded inflated prices. Tincroft, at the close of 1856, sold at 3*l.* 5*s.* a share, and paid in dividends for that year 22½ per cent. (15*s.* a share). The dividends for the past 17½ years amount to 39½*l.* per share (238,500*l.*), just over twelvefold its commercial worth in 1856. The average dividends over the period is just 2*l.* 5*s.* a share, or (say) 6*l.* 16*s.* 4*d.* per cent. on current value (33*l.*) The last quarterly dividend on Dolcoath was 10*s.* a share, Tincroft 5*s.* a share, and South Caradon 1*l.* a share.

The future worth of these mines, and many other deep and expensively wrought ones in Cornwall, depends solely on prices of products, cost of labour, merchandise, machinery, and fuel. The elements associated with and controlling these are each and all conflicting, vascillating, and speculative, and stand distinctly severed from any defined or tenable principle applicable to the future of mining; for, unlike the greater number of progressive and undeveloped concerns, these rely on a continuance of discovered ores in depth, and not on the realisation of pioneer points from cross-cuts to side lodes, or other chances that frequently exist in maiden ground. In fact, the mines in question are opened upon from east to west, and thoroughly cross-cut from north to south. Hence depth alone remains!

I address these remarks to the student of investments, and from no desire to depreciate Dolcoath, Tincroft, and South Caradon; but in order to appreciate and in some degree account for the universal depression in Cornish mining, it is necessary to refer to the inflation of all descriptions of dividend and favourite market mines that have existed up to a recent date, and for a period of five to seven years. "Cause and effect" are usually allied, and every "positive" has a "negative." If Dolcoath and Tincroft be foisted up to 400,000*l.* they must retire to 100,000*l.* in order to pay 10 per cent., if not below. Again, if Treleigh Wood be raised to 200,000*l.*, and others in proportion, they must necessarily end in disaster. Consols, India stock, railways, and other *bona fide* investments possess a standard of commercial worth, and who says that mines should not have a standard of value equally defined and as soundly based as either of them, yet there are many, in well-informed circles, who think still that the deep tin and copper mines of Cornwall are selling fully high enough. These gentlemen do, and very justly too, look to the shallow, well-developed, and inexpensive progressive (yet expansive) mines for future gains as pioneer point after point becomes achieved, and not to the old and formerly rich dividend properties that now rest alone important to merchants, manufacturers, landlords, and executives, or what are known in Cornwall as the "vested interests of the county."

The disciple of the Science of Investments should look to these progressive undertakings, which may rapidly advance from 100 to 500 per cent. in value, and I am pleased to add that at no former period within the scope of my forty years' experience have so many encouraging and cheering adventures been on the *tapis*. It is to these that we would refer the reader, as from such spring those prizes that fascinate while they startle the greed of alike the needy and the opulent enterprising miner.

THIRTY DIVIDEND MINES, DEC. 30, 1856.

	Price per share.	Div. per share, 1856.	Percentage.
Alfred Consols	£ 18	£ 1 14 0	£ 9 9 0
Basset	270	61 10 0	22 15 0
Bedford United	7¼	0 12 6	8 6 8
Boscean	85	12 0 0	14 2 6
Botallack	160	29 0 0	18 0 0
Buller	260	90 0 0	34 12 6
Condurrow	170	15 0 0	8 16 0
Devon Great Consols	435	58 0 0	13 6 9
Ding Dong	35	10 10 0	30 0 0
Dolcoath	210	28 0 0	13 6 8
East Pool	310	25 0 0	8 1 0
Great Work	175	32 10 0	18 10 0
Kitty (Uny Lelant)	14	2 5 0	16 1 0
Levant	90	8 0 0	8 10 9
Margaret	40	8 15 0	21 18 9
Mary Ann	45	7 10 0	16 13 4
North Basset	37	4 9 6	12 13 4
Par Consols	22	3 0 0	13 14 0
Phœnix	400	57 10 0	14 7 6
Providence	72	18 0 0	25 0 0
Rosewarne	45	13 10 0	30 0 0
Seton	185	14 10 0	7 16 9
South Caradon	355	48 0 0	13 10 0
South Frances	360	53 0 0	14 14 0
St. Ives Consols	100	20 0 0	20 0 0
Tincroft	3¼	0 15 0	23 0 0
West Basset	33	3 19 6	12 2 0
West Providence	13	2 15 0	21 3 0
West Seton	365	34 0 0	9 6 0
Wrey	8½	1 7 0	15 17 6
Total	£4823	£665 2 6	£15 7 6

In conclusion, Dolcoath has realised dividends of 287,000*l.* from Jan. 1, 1856, to June 30, 1874, inclusive of the 10*s.* dividend a few days ago. The market value is 200,000*l.* To show most clearly that dividend mines in Cornwall are selling too high to tempt purchasers, I have only to state that 200,000*l.* laid out at 5 per cent. compound interest will become 475,000*l.*; while the interest alone, irrespective of principal, would be close on 600,000*l.* from Turkish Five per cent. Bonds, over the same period dated from this time.

39, *Lombard-street, July* 16. R. TREDINNICK, Dealer in Stocks and Shares.

WEST GREAT WORK MINE—THE COST-BOOK SYSTEM.

SIR,—I am at a loss to know what Mr. T. B. Laws, the secretary of sundry *cost-book* mines, has to do with West Great Work property, and the petition filed in the Stannaries Court (since dismissed) by Messrs Harvey and Co.

I attacked a System which, under the firm grasp of the Stannaries Court, is hateful in the eyes of the British public. The letter of Mr. Laws was quite uncalled for, and I regret to say that some of his remarks are untruthful and most insolent. As a secretary to certain mines he is a paid servant of those companies, and as such it would be far more to his credit to attend to his duties, and not interfere with matters which do not concern him.

33, *Poultry, E.C., July* 13. H. GOULD SHARP.

WEST GREAT WORK MINE—THE COST-BOOK SYSTEM.

SIR,—I have read in the Journal of last week, a letter from Mr. Laws in reference to the above mine and the Cost-book System, and Mr. Sharp, which would not concern me were it not that after censuring Mr. Sharp for injuring the property of others, Mr. Laws proceeds to make remarks decidedly prejudicial to the above mine, although he says "I do not know anything of the West Great Work Mine or its belongings." Mr. Laws suggests that the affairs of the mine are in a wretched mess; that there is no committee; that the shareholders might as well have allowed the winding up to take its course; and designates as "flats" all those who are about to work the mine under the Limited Liability Act.

As a large shareholder, and, therefore, greatly interested in the success of the mine, I do not think such remarks should pass without notice; especially at this time, when we are about to raise capital by the issue of new shares, and when it is, therefore, important that the public should know the exact truth as to the state of the mine. In reply to Mr. Laws' suggestion, I beg, therefore, to state that I can speak from personal knowledge as to the existence of a committee, and that I am not aware of the affairs of the company being in any mess whatever. That we decided to work the mine as a Limited Liability company because we thought it better and safer than the Cost-book System, and that we had no wish to be wound up, because we have every reason to believe in the speedy success of the mine, of which we are positively assured by the manager, Capt. J. S. Reed. I will only add that I have lately had the mine inspected for my own satisfaction, when I was glad to find Capt. Reed's statement completely verified. The report, stating—"With the present prospects, I consider the future of the mine will be laid open in another (say) three or four months; and with a small amount of money and a little time the returns of tin will be considerably increased, judging from present prospects." If Mr. Laws' letter should call forth any remarks from others personally acquainted with the mine I, for one, shall be very glad to see them.

A SHAREHOLDER.

WEST WHEAL LUCY.

SIR,—Knowing this mine well, and its situation, I am greatly surprised that gentlemen who are mixed up so much with mining in this county should neglect such a promising piece of mining ground. It is a well-known fact that this mine is traversed by lodes that have yielded large amounts of mineral. Wheal Reeth, Wheal Mary, Wheal Margaret, Trencrom, Wheal Kitty, and other mines might be mentioned which have yielded large returns, and not one of them could show better prospects at the depth than this mine. I have been informed that there is now a good lode in the shaft near the Ferry, only 12 fms. from surface, worth, at the present price for tin, 20*l.* per fathom, and the pitwork is in the shaft, and a house erected for a portable engine. So it is plainly to be seen that a good parcel of tin-stone could soon be sent to the market, and there is to be a railway to go through the mine, by which every kind of material used in mines can be delivered at the cheapest rate. MINER.

[For remainder of Original Correspondence, see to-day's Journal.]

SULPHUR.—Australian papers state that a company has been formed to work the sulphur deposits at White Island, a marine volcano 140 miles from Auckland. It is estimated that 100,000 tons of sulphur in an almost pure state are lying on the island ready for shipment.

Original Correspondence.

DYNAMITE AS AN INDUSTRIAL AGENT.

The important question of the industrial use of explosives has of late gradually entered upon an entirely new phase, a phase which will appear unexpected and astonishing to those who are familiar with the extraordinary barrier raised some five years ago by the legislative enactment known as the Nitroglycerine Act of 1869, and with the persistent, but for the time apparently unavailing, efforts made to obtain the abrogation and repeal, or otherwise suitable modification, of that arbitrary, harassing, prohibitory, and hasty piece of one-sided legislation—a movement in which the *Mining Journal* has taken a prominent part.

The Parliamentary Session of 1874, however, marks a new point of departure in this matter, being rendered noteworthy by the presentation and publication of the important reports of Major Vivian Dering Majendie, R.A., upon the necessity for the amendment of the law relating to gunpowder and other explosives—by the subsequent appointment of a Select Committee of the House of Commons upon the whole question, of which Sir John Hay was Chairman—and by the report of the said committee thereon, to the effect "that the law relating to the making, keeping, carriage, and importation of gunpowder, nitroglycerine, ammunition, fireworks, and all substances of an explosive nature does not make adequate provision for the safety of the public, or of the persons employed in such making, keeping, carriage, and importation, and that farther legislation is urgently required with a due regard to the necessities of the trade," and submitting for the consideration of the Legislature a summary of suggestions by Major Majendie, with modifications made by the committee, which, thus amended, includes the subject matters for further legislation.

The necessity for emendations in the existing Acts relating thereto having thus authoritatively been declared urgent, it is to be hoped that immediate action will be taken thereon, with a view to a revision of the defective enactments, and their establishment upon a broad, sound, and satisfactory basis.

It is not our present purpose to discuss the entire subject, or consider in detail the summary of suggestions alluded to, which we shall do as occasion serves in the future; but it will suffice here to remark upon the committee's expression of opinion that "further legislation is urgently required with a due regard to the necessities of the trade," as being especially encouraging in two respects—firstly, as justifying every objection that has been urged against the Nitroglycerine Act of 1869; and, secondly, as promising legislation in a thoroughly practical and impartial sense.

We are, however, more particularly led to advert to this subject at the present time in connection with its bearing on the use of dynamite in various industrial operations, and because of reports which have reached us of recent practical exemplifications of the industrial use of dynamite, that explosive being one of those nitroglycerine compounds which were so harshly and arbitrarily dealt with by the Nitroglycerine Act in a manner against which we have so frequently and energetically protested. A brief extract from the report of Major Majendie, the highest authority on the subject, as Her Majesty's Inspector of Gunpowder Works, will suffice to show the existing aspect of the matter, and the practical injustice wrought thereby. He says (pp. 78, 79)—

> It is a measure which is very open to criticism. . . . Any person who imports, exports, manufactures, sells, carries, or otherwise disposes of or has in his possession any nitroglycerine, or any substance having nitroglycerine in any form as one of its component parts, without a general or special license issued by a Secretary of State . . . liable to be imprisoned, with or without hard labour, for any period not exceeding one year, or to pay a penalty not exceeding 500*l*. . . . These provisions, however necessary they may have been at the time of the passing of the Act, when the safer applications of nitroglycerine (such as well made dynamite) were comparatively unknown, appear to me with our present knowledge to be unnecessarily stringent.* . . .
>
> * Here in a foot note is added the remark that by the title of the Nitroglycerine Act it is professedly an Act to regulate "for a limited time" the importation, &c., of nitroglycerine.
>
> Again, although it was doubtless right and proper to forbid the carrying of nitroglycerine without a license, or the carrying under any circumstances of a description of nitroglycerine preparation, the safety or stability of which there are good grounds to suspect, it is hardly reasonable to forbid a person to carry any safe, duly recognised, nitroglycerine preparation in however small a quantity without a license. . . . In my opinion we have all the experience which is necessary to enable us to say without hesitation that it would be proper to place nitroglycerine preparations on the same footing, as near as may be, as other explosives. . . . The time has, in my opinion, come when it will be proper to place safe and approved descriptions of nitroglycerine preparations broadly upon a similar footing to gunpowder. This cannot, however, be done without repealing the existing Nitroglycerine Act. But to repeal the Act without providing a substitute would fail to accomplish the object, and would leave explosives of this class practically unregulated, an arrangement which would be most dangerous and improper. Therefore the occasion seems suitable for incorporating in one measure homogeneous provisions for the regulation of all explosives, so as at once to correct the defects of the existing Gunpowder Acts . . . and to bring the law relating to nitroglycerine preparations more into harmony with the general legislation relating to explosive substances. . . . Everything is now ripe for legislation, and it would be a matter for regret if another session should pass without this long-needed amendment of law relating to explosives being effected."

In his report Major Majendie makes particular reference to the completion of the factory of the British Dynamite Company, at Ardeer, near Glasgow, which may be said practically to have inaugurated in this country the manufacture of that explosive, and its circulation for industrial purposes on a large scale. Quite recently, and in various localities—at Savernake Park, Wilts; at the Mount Sorrel Granite Quarries, Leicester; and at Lord Dudley's mines, in Staffordshire—the use and advantage of dynamite as a blasting agent have been practically illustrated by the British Dynamite Company's manager, Mr. J. Downie, at the request of the various proprietors, and in the presence of their agents; and these trials bear valuable testimony to the correctness of the views and conclusions so ably set forth by Major Majendie in the foregoing extracts.

At Savernake Park, the seat of the Marquis of Aylesbury, his lordship's steward, Mr. Bolam, is availing himself of dynamite as a powerful auxiliary in clearing land of tree roots, boulders, and other such obstacles to its economical cultivation. Having to stub up and remove the "stools" of large beech trees, oaks, &c., with wide-spreading, deep, and long fangs or roots, tough and intertwined, he finds that the trouble and expense of their extirpation by manual labour may be cheaply and advantageously superseded by the use of dynamite in comparatively small charges to rend, split up, and shatter them, so as to render their extraction and removal simple and easy. For this purpose Mr. Bolam and Mr. Downie, in concert, in the recent experiments, at which Prof. Abel was present, made trial of various methods. In the first place the stumps or stools are girdled by a circular trench severing the outer extremities and thinner portions of the roots; in the second place, in some cases a central drill-hole, 1¼ in. in diameter, is bored vertically with an auger to a depth of some 18 or 20 in., or more, according to the depth and extent of the solid wood, this hole being then charged with a suitable number of dynamite cartridges, 1¼ in. in diameter, and about 2 ozs. in weight each, making a total of from 2 to 16 or 20 ozs. in all, according to the size of the stool; the charge is then exploded by means of a small primer, with detonating cap and a Bickford's patent fuse, the drill-hole having been duly tamped with moist or dry soil or clay, or water. In other cases diagonal drill-holes are bored from the periphery downwards towards the centre underneath the root, and are then successively charged and exploded with suitable smaller charges of from 2 to 6 ozs. of dynamite. The effects of the explosion, even of small charges, in rending and shattering the stool, are remarkably powerful and efficient. In one case on a shot being fired a large forked splinter from one of the fangs was projected with such force as to cut off two branches from a fine old beech tree at a distance of over 100 yards, and at a height of some 50 or 60 ft. from the ground. Of course, it is essential on the firing of each shot that the men engaged should take care to remove to a sufficient distance, preferably to windward, so as to avoid all risk of accident from splinters; care should also be taken to make the drill-hole and lodge the charge in a sound and solid part of the root, as the explosion follows invariably the outlet of least resistance, and may, therefore, be less effective if expended merely on the surrounding soil.

As regards the practical use of dynamite as an explosive agent for such purposes, it is found that it may be safely entrusted to the hands of the ordinary uneducated labourer, no other precautions than those above specified being necessary. This was conclusively shown by Mr. Downie in various ways, by setting fire to the dynamite cartridges, both by an ordinary light and by means of a fuse; in both cases the dynamite simply burnt with a rush of flame; and in fact, as is now conclusively demonstrated, dynamite cannot be made to explode by fire or concussion, or in any other way than by a detonator. All the consecutive operations of inserting the cartridges in the drill-hole, ramming them with a wooden rammer, cutting the fuse, and fitting it into the detonator, inserting the detonator into the priming cartridge, and this into the hole on the dynamite charge, and tamping the hole, are perfectly safe and free from danger, and not in any way beyond the capacity of the class of men employed. From its pasty consistency the dynamite is well adapted to fill the bore-hole when rammed, and it has the great advantage and superiority of being available in moist and wet ground, and under water, where other explosives are temporarily rendered inert. This was shown on the occasion referred to by the explosion of the cartridges, by fuse and detonator, when thrown into a large pond in the park, a fine column of water being thrown up to a height of at least 100 ft. Large whinstone boulders were also shattered in pieces by the explosion of cartridges simply laid on the surface. We may note briefly that Mr. Prentice, of Stowmarket, made at the same time corresponding trials of compressed guncotton cartridges, with nearly similar results, displaying, however, a slight inferiority in that explosive to dynamite in point of adaptability, cost, and efficiency.

As regards the other trials referred to—at the Mount Sorrel Granite Quarries and at Lord Derby's pits—we may briefly remark that they conclusively demonstrated the safety and ease of manipulation, the power and efficiency of dynamite as a blasting agent in mining and quarrying operations under a variety of circumstances. At Mount Sorrel, for instance, a wall or bridge of granite, obstructing communication between two tramroads, measuring about 32 ft. in length, by 8½ ft. in thickness and 5 ft. in height, was entirely and effectually broken up and removed by a single explosion of six cartridges, or ¾ lb. of dynamite, in one 1¼-in. drill-hole; thus over 1400 cubic feet or 100 tons of granite were broken up and displaced at a cost of 1s. 6d. It is proposed, also, to employ this industrial agent in the manufacture of broken stone or Macadam, of which about 2000 tons weekly are supplied from these quarries. Large irregular masses in the face of the rock are shattered and dislodged by the explosion of small superficial charges; other immense blocks are broken up into smaller fragments for curbstones, &c. As further examples of work done, we note that in one case the explosion of 2½ lbs. of dynamite, costing 5s., in a 3-in. bore-hole, drilled 15 in. deep, displaced 400 tons of solid material; also a 16-ton block was split up for curbs by 2 ozs. of dynamite, in a lode 6 in. deep, at a cost of 4d. At the monthly meeting of the South Staffordshire and East Worcestershire Institute of Mining Engineers reference was made to the successful experiments, made on the same day at Lord Dudley's Castlefield Pits, in blasting limestone rock; and a member, Mr. Parton, gave some particulars of the employment of dynamite on the Duke of Sutherland's estates in the North of Scotland, at the Brora Coal Mines, as well as in aid of clearing waste and uncultivated land at Lairg for agricultural purposes, where steam ploughing and sub-soiling to a depth of 20 in. is being carried on. Roots and stumps, otherwise costing nearly 6s. 6d. to remove, are got rid of with dynamite at a charge of 8d., and boulder stones of 8 or 9 tons in weight, previously costing 2*l*., cost now but 16d. to remove with the valuable aid of this explosive.

Finally, it may be noted that also in America there is obviously a wide field for the introduction and use of dynamite for the clearing of wild and forest lands. Already we learn, in addition to its use in the mining districts of Lower Canada, some 18 tons have been forwarded to Upper Canada for the clearing of the land in some of the immense tracts of virgin forests of that country. *Apropos* of America, we notice in the *New York Tribune* of the 24th ult. an account of experiments with explosives at the first public exhibition of the Corps of Sappers and Miners, organised in connection with the Fire Brigade of that city, under an Act of the Legislature of 1873. The members of the corps having undergone weekly instructions in the application of different explosives, particularly dynamite, and in the use of electricity, a public demonstration was held, when brick walls were cut through and cut down at different heights, and strong floors cut through, concluding with the simultaneous demolition of seven brick walls by a continuous line of cartridges, yielding but one single explosion. It may be remembered that this application of dynamite, for the destruction of buildings, to stay the progress of a conflagration, has been adopted originally at Boston, where stores of dynamite are established in various districts of the city for that purpose.

All these facts tend to show the great interest and wide importance of the subject, and will give useful hints and indications to our home officials, landowners, and agriculturists, no less than to our quarry and mine proprietors, forming large and influential classes of the community.

MUSEUM OF INVENTIONS—PRACTICAL DEMONSTRATIONS.

We are glad to notice the renewal of the Museum of Inventions at that home of popular science, the Royal Polytechnic Institution. For some time even the display of models was allowed to decade into unimportance. Prof. Gardner has, however, now undertaken the superintendence of the scientific department of the Institution, and is working with an earnest desire to do justice to inventors and others, not only in displaying but in demonstrating their inventions. Explanations of the main features of inventions are given in lectures, and by apparatus experimentally illustrating their principles. This plan is a decided advantage over the questionable one usually adopted of placing models in our museums or exhibitions to take their chance, not of being explained, for that they never are, but of being seen at all, or, if seen, of being understood.

The Polytechnic directors, desirous of benefiting inventors as much as possible, have determined to give every facility for the display and demonstration of all novelties and inventions, and to this end they have entrusted this department to Prof. E. V. Gardner, F.F.S., M.S.A., under whose superintendence arrangements are made. We will give a brief outline of some of the present demonstrations which are now being given by Mr. H. Edmonds, one of the demonstrators. A novelty, of which we have heard something already, the Griffiths Patent Tube Boiler, made by Halliday, of Manchester, is an improved steam generator. It possesses all the advantages of a tube boiler, with the invaluable addition of water and steam reservoirs, securing great safety in the generation of steam without in any degree interfering with the general convenience of an ordinary boiler.

The Griffiths boiler is eminently a circulating arrangement upon the principle of the convexion of heat, with which we are familiar in connection with hot-water apparatus. The water in this boiler is made to circulate from the tubes to the reservoirs and back again, while by an ingenious arrangement of the furnace the flames and heated gases are made to act vertically on the tubes instead of horizontally. In this manner not only is great heating power secured, but a quick evaporation. The continual circulation of the water keeps the tubes of the boiler perfectly clean and free from scale. Cubical cast-iron boxes or heads furnish the connections by means of which the tubes are supported; the water passes in at one end, and the steam finds its exit at the other. These heads are six-sided boxes, with apertures through each side; one chased with a fine thread receives the screwed end of a tube; the four sides at right angles to this are carefully faced to a gauge, and bored and turned to fit one to another, while the side opposite to the tube has an oval hole faced to receive a double cover or door for access to the tubes at any time. All the joints are made metal to metal, with just a thin painting of tallow or red lead when being put together. The feed is admitted at the bottom of the back end of the boiler, the tubes inclining upwards towards the front. The steam issues at the top of the front end of the tubes, and passes to the reservoirs. From the other end of these reservoirs another set of pipes lead down and connect with the feed-supply pipe, so that a constant rise and flow of water from the tubes into the reservoir takes place, and a corresponding flow out of them to the feed-supply pipe at the back or lower end of the tubes. From this description it will be seen that the main features of the boiler lie in the strength of its parts, and ample provision for the supply of water to the tubes, and for its circulation in all directions, both horizontally and vertically; in the preserving the boiler from scale by the free circulation of the water, in the provision for the free exit of steam from the boiler, and in the facility afforded for thoroughly blowing off.

A working model of Johnson's Smoke and Fume Condenser shows most satisfactorily the readiness with which smoke and fumes may be condensed. The contrivance is very simple; the smoke or fumes pass from the furnace through a chamber, the lower part of which is a tank of water. This chamber is fitted with racks of wooden laths, and two dash-wheels revolve therein; they throw a spray of water through the chamber and on to the wooden laths, washing and purifying the contents of the chamber. The smoke and fumes are thus condensed, and the products of the condensing process are exhibited in various bottles. This arrangement does not, as might be at first imagined, interfere with the draught. The revolving blades of the dash-wheels act as a fan-blow, and the draught may be increased to any extent by their use. For lead, zinc, and alkali works—and, indeed, in any situation where saving of otherwise waste materials or prevention of smoke is an object, this invention must prove, as it has already done, of great service.

Amongst these demonstrations we noticed some new methods of filtering water on an extensive scale, which have been recently planned by Messrs. Atkins and Co., of Fleet-street, and which are marvellously simple, while we are assured they have proved themselves in practice most effective. Those who delight in curiosities will find some curious clocks. One—a Japanese—is a great curiosity; another, which goes without winding for twelve months, on the simple principle of having the hour hand on the principal pinion, and the minute hand worked by an almost independent train of wheels, is worth attention. Electric pendulums and secondary clocks, and one called a mysterious clock, with a pendulum worked by a clock with which it is in no visible connection, are all novel, and worth consideration. Nor need we to want objects of attraction, for the demonstration platform and table contain many others of great interest. Coffee making on the most improved plan with Ash's "Kaffee Kanne." Cooking in a novel form, and various household ingenuities are exhibited. We saw an omelet cooked in a few seconds and a small kettle of water boiled with a few pieces of waste paper by a little apparatus that could be taken to pieces, and placed without any inconvenience in a coat pocket. To tourists such ingenuities are worth thinking of. We cannot enumerate the many subjects which are now being demonstrated, but will do so from time to time as we have opportunity.

ECONOMIC ILLUMINATION—THE SILBER LIGHT.

Although the near approach to perfection of the Silber Light when first brought before the public some two years since left little room for improvement, the experience obtained in introducing the light has proved that the principle adopted is capable of even more extensive application than was at first supposed; so that the experiments made and descriptions given by Mr. SILBER, at the London Tavern, on Saturday evening, in the presence of a large number of scientific gentlemen and others interested in economic illumination, had the same freshness and attractiveness as when the system was explained for the first time. The room was admirably arranged for showing the relative value of the Silber burners, and those of the best forms previously in use; the comparison being much facilitated by careful explanations of the inventor. Commencing with an account of the invention of the annular burner by Amy Argand, in 1789, he traced the extension of the principle so as to render it applicable to the burning of gas illustrating the amount of success obtained by showing three of the best Argand burners now in general use, and the improved Argand or Sugg's test-burner, which, according to the gas with which it is used, will give from 14 to nearly 18-candle light by the consumption of 5 ft. of gas per hour, and then passed on to his own burners, with which, the consumption of gas being similar, an illumination of from 20 to 22-candle light can be relied upon, with gas as supplied to the City.

Referring to a series of most exhaustive and rigid tests, both with cannel and common coal gas, just made by him with the most perfect photometrical apparatus obtainable, Mr. W. Valentin, principal demonstator at the Royal College of Chemistry, South Kensington, states that Argand gas-burners, like the burners of the same kind used in oil lamps, have hitherto been limited as to size or diameter of flame, and a consumption of from 5 to 10 cubic feet of gas per hour has for the most part been considered the limit of their performance, and he considers that Mr. Silber's improvements, by adjusting the supply of air to the inner and outer parts of the flame, render any size of burner possible. Mainly among these improvements there is an inner narrow straight tube open at top and bottom, which, when of the proper diameter, regulates the inner air draughts, and directs a gentle current to the higher parts of the flame which more particularly require it, whilst at the same time a comparatively cold current of air is directed through the central part of the burner, cooling the heated products of combustion as they ascend through the chimney, and causing a gentle influx of fresh atmospheric oxygen into the upper part of the flame. A delicate and well-studied adjustment of the supply of air to the different parts of the flame gives rise to a denser flame, and to a more uniformly white light throughout, than any hitherto produced by Argand burners, not detracted from, as is usual in ordinary Argand burners, by a portion of blue (waste) flame in the lower parts of the zone of combustion. Not less striking, he continues, than the remarkable white light which the new burners produce is the steadiness of the flame, so beneficial to the eyes—a steadiness never obtained hitherto by any gas-burner. If any proof were wanted that the air supplies are regulated with the utmost nicety it will be found in this, and in the fact that common gas can be burnt in these burners with as white, though less dense, a light as the best cannel gas, the difference being, of course, only in the quantities consumed.

The general applicability of the new Silber-Argand burner is, Mr. Valentin thinks, strikingly illustrated by the fact that cannel as well as common coal gas can be burnt in them to the same advantage. If the richer cannel has to be burnt the consumption has merely to be reduced (say) from 5 cubic feet to about 3·5 or 3·8 cubic feet; or, in order to burn the same quantity of the richer gas, a higher chimney need only be substituted, and, *vice versa*, for a poorer gas a somewhat lower chimney. And from the result of numerous photometrical testings extending over a number of days, and conducted under varying conditions, and with different qualities of gas, possessing an illuminating power of from 14 to 17 candles for common gas, and 21 to 22 for cannel gas, when tested according to the methods and with the best test-burners now used in London, Mr. Valentin can state with confidence that the New Argand gas-burners, made of porcelain or of metal, with steatite tops, with 24, 32, or 40 holes, give an average illuminating power of from 20 to 22 candles for 5 cubic feet of common city gas when used with a cone, and from 20 to 22 candles when used without a cone Cannel gas, producing by the ordinary test-burners 21 to 22-candle light for every 5 cubic feet of gas consumed, gives the same amount of light for about 3·5 to 3·8 cubic feet of gas consumed in the new Argand gas-burners; and it should be mentioned that all the Silber burners are so made that they can be applied to the existing fittings without making any change.

It required no photometrical apparatus to distinguish that on Saturday evening the Silber-Argand burners had decidedly the advantage, in point of purity and brilliancy of light, of the ordinary Argand's beside them, although the latter were certainly burning well, and but for the test being a comparative one no fault could possibly have been found with them. And Mr. Silber showed that the chimney, although of the simplest construction and cheapest make, was not injured by the heat, owing to the combustion being so perfect that the chimney could at any time be removed with the naked hand, and that it remained clean for many days. He continued, that the high illuminating power was of importance, apart from its economy, since it admitted of arrangements which greatly preserved the sight. With the ordinary Argand burner, which gave but 10 to 12-candle light, they

could not afford to obscure any part of it, whilst with 20 to 22-candle light at disposal the opal globe could be used, which softened the light, so as to prevent injury to the eye. The globe which he put on reduced the illuminating power by about 7-candle light, which left them 15-candle light, with the Silber-Argand, but would reduce the ordinary Argand to only 7 or 7-candle light—a very inadequate quantity. Mr. Silber explained that his improvements in batswing burners were based upon the same principle which had guided him in his other burners—that of accurately adjusting the supply of air to the quantity of gas consumed. The new batswing burners were really double burners, consisting of two batswings, the one capable of delivering (say) about 3 cubic feet of gas into a pear-shaped metal cup crowned with a second batswing burner, capable of delivering about 5 cubic feet of gas. By these simplest of means the amount of gas issuing from the top burner can at no time be greater than the smaller burner allows of, and it must, therefore, issue from the upper or larger burner at a *minimum* of pressure. Gas burnt under these conditions from batswing burners is known to give the maximum of illuminating power. The photometrical results obtained by Mr. Valentin fully bear out the correctness of these conditions. The illuminating power produced by these burners, consuming from 2 to 8 cubic feet of gas, ranges from 4 to 30 candles, and they may, therefore, be considered a considerable improvement upon burners of a similar kind hitherto constructed.

Passing to the consideration of the more powerful lights required for lighthouse and signal purposes, he described his multiple concentric burners, and port, starboard, and masthead lights, which were certainly excellent. He explained that since submitting to Mr. Valentin his smaller Argand burners he had succeeded in constructing large and small concentric ring burners, one of which (on the table) was tested at the Drapers' Hall. A consumption of 86 cubic feet of gas per hour gave a much higher illuminating power than 300 cubic feet of gas consumed by 75 fish-tail burners. The light was placed outside the window upon the roof and lit up the coloured window. The advantages of this mode of lighting up large halls, &c., without producing heat and vitiating the atmosphere of the rooms, will probably ensure a more general application to these large lights. He showed a brilliant light burning in a lantern without a chimney or any equivalent for it, and ship-signal lamps burning upon the same principle, and giving a light more intense and pure than any hitherto obtained. The illuminating power is about equal to 26 candles, and a burner of the same size fitted to a moderator lamp was tested by Mr. Valentin, and found to consume only 49 grains of oil for each candle light, whilst an ordinary moderator lamp consumed from 65 to 66 grains of colza oil per hour for each single candle light given, so that a saving of about 33 per cent. is effected by using his burner. He remarked that many attempts have been made, all more or less successful, to convey air to the burner through apertures somewhere in the lantern, and from thence through tubes or chambers to the flame. These attempts have been wrong in principle, because the air track in all of them, however circuitous, has been continuous and unbroken. If we take a rigid tube of whatever form and twist it into any number of turns and coils, and then blow into it, we shall find that the forcible exit of air at one end will be simultaneous with its forcible entrance at the other. In the same way a lamp with a continuous air track, if moving with a train or vessel, is exposed to sudden rushes of air upon the flame, and even if standing still, similar rushes will be produced by alterations in the force or direction of the wind, or by any other atmospheric disturbance.

The principle upon which these chimneyless lamps are constructed is at once simple and ingenious. The lamp, in the first place, receives its air supply from above, and neither movement nor atmospheric disturbance exerts much influence on the rate at which air descends through an aperture. This rate is mainly governed by that of the escape of the hot air, which has its outlet within the circle of ingress of the fresh supply; the cold air, on entering, is met a few inches below the aperture which gives it admission by a solid metal top or inner roof, which becomes heated when the lamp has been burning for a few minutes. A slit at the end of this inner roof allows the slightly warm and rarefied air to proceed onwards whenever it can find opportunity—that is to say, as rapidly as the exit of the exhausted or consumed air makes room for it. On its course it passes over the receptacle in which the supply of oil is stored, and keeps this at a moderate and regulated temperature, then between this receptacle and the inner side of the outer part of the lamp, and, lastly, beneath the chamber to which the burner is fixed, from whence it finds admission to the flame. The height of the wick is regulated without opening the lantern, and these lanterns, having no opening of any kind at their lower part, are especially valuable for use on board ship. He showed that there was no possibility with his arrangement of a continuous current of air being driven in any one direction, but that the air can only diffuse itself gradually and in proportion to the room made for it, through a succession of chambers, which effectually break up its continuity. Moreover, the capacity of the chamber is so calculated that no more air can enter the lantern than is actually required for the maintenance of proper combustion. The light from these lamps can be seen for many miles, it is continuous, and requires no attention for 16 hours or more. They have been practically tested and approved by some of the most competent authorities in the country.

But the lamp which indicates probably the greatest progress which Mr. Silber has made is the very excellent punkah lamp which he has constructed, and which has the great advantage that it can be supplied at a price scarcely exceeding that of an ordinary table lamp. He showed by violently fanning the lamp with a large sheet of tin-plate that it was impossible to make the flame move, although the disturbance of the air was so great that those of the Argand burners, which had been used in the previous experiments, all licked the chimneys and smoked considerably. This lamp is unquestionably the best hurricane lamp yet produced, and cannot fail to come largely into use. In conclusion, Mr. Silber showed new railway carriage lamps, of which several hundreds are now being constructed for use on the Continent in "Mann's Sleeping Carriages." He explained that this lamp differs from any hitherto constructed. The atmospheric oxygen necessary for combustion is supplied from outside the roof, where also the products of combustion are dispersed, and when, as in a sleeping-car, doors and windows are sometimes shut, the lamp ventilates the carriage no matter whether lighted or not, and the globe of the lamp keeps about the temperature of the atmosphere inside the carriage; neither slamming of doors, rattling over points, great speed, nor passage through tunnels affects the light; and these lamps are so constructed that either colza or so-called mineral sperm oil can be burnt in them to equal advantage. The light which it produces is equal to 15 sperm candles. At the conclusion of the address, which was very favourably received by the audience, a vote of thanks to Mr. Silber, moved by Lord John Hay, was carried by acclamation, and all present appeared thoroughly satisfied that Mr. Silber's inventions were not only of great commercial value, but of considerable social importance also.

STEAM GENERATOR.—Mr. J. F. RENARD, of Liege, has patented (through Mr. Gedge) an improved steam generator, applicable to stationary engines. This invention relates to a multitubular steam generator with exterior fire-place, applicable to fixed engines. The generator is composed of two cylinders of equal diameter but of unequal length, united by a tube or cylinder of half their diameter, and by tube plates receiving a considerable number of steam tubes, which are exposed to the direct action of the fire; the flame and the gases after passing through the sheaf of tubes going into two flues. Behind the fire-bridge is a reservoir receiving all the particles of coal carried away by the gases. The feed takes place from the bottom end, which also serves as a reservoir for the calcareous deposits accumulating within the generator. The advantages claimed are—great production and rapid getting up of steam, great saving of fuel by the complete utilisation of the caloric, lightness and relatively smaller bulk, good steam and water chamber, construction simple, and easy inspection, repair, cleansing, and freeing from incrustation.

HOLLOWAY'S OINTMENT AND PILLS—RELIEF AND REMEDY.—It is useless here to enter into the question how this Ointment works such astounding cures of all descriptions of sores, ulcers, bad legs, and scorbutic or scrofulous eruptions. Sufficient is it for all sufferers to know that the united testimony of thousands proves the healing powers of Holloway's Ointment, and earnestly recommends its trial to all afflicted with these maladies. When this treatment is once commenced the ease and comfort it bestows will induce its steady continuance till the cure is completed. A vast advantage in using Holloway's widely appreciated medicaments arises from the fact of their requiring neither confinement nor much change of diet to exert their unfailing sanative effects.

Meetings of Public Companies.

FLAGSTAFF SILVER MINING COMPANY.

An adjourned extraordinary general meeting of shareholders was held at the Cannon-street Hotel, on Monday,

Mr. T. TWEED in the chair.

Mr. J. RENDALL GOLE (the secretary) read the notice convening the meeting.

The CHAIRMAN said it would be remembered that at the last meeting, of which this was an adjournment, a resolution was submitted, to which an amendment was proposed—the resolution, put by Mr. Uppleby, was "That the board be authorised to take such steps as counsel may advise, but that the directors have still authority to enter into any compromise they may deem best for the true interest of the company." The amendment, proposed by Mr. Serjeant Sleigh, was that the meeting request Mr. Henry White to withdraw his resignation, and that an adjournment should take place for a fortnight, to ascertain whether Mr. White would comply with the request. The amendment was put and carried, and the resolution negatived. That being the state of things, the present meeting had very little to do. In compliance with the terms of the amendment, a copy was forwarded to Mr. White, and he (the Chairman) need hardly reiterate what he had stated on a former occasion—that the directors as well as the shareholders would have gladly welcomed Mr. White back to that seat which he (the Chairman) now so unworthily occupied; but, unfortunately, Mr. White says that his health prevents him complying with the shareholders' wishes. Mr. White's letter is as follows:—

July 6, 1874.

DEAR SIR,—I am obliged for your letter of the 1st inst., containing copy of resolution passed at a general meeting of the company held on that day, requesting me to withdraw my resignation and resume my seat at the board. I feel honoured by this evidence of their confidence, and shall be glad if you will convey to your adjourned meeting of shareholders my thanks for the same; but in my present state of health I am quite unable to undertake the anxious duties of Chairman, and, therefore, most respectfully decline resuming my seat at the board. In conclusion, I beg you will inform the meeting of my decided opinion as to the paramount importance of avoiding litigation with Mr. Davis; he is master of the position, and, however strong may be their legal remedies, I feel that prudence points to peace. Very truly yours, HENRY WHITE.

Mr. J. R. GOLE, Secretary of the Flagstaff Silver Mining Company.

He (the Chairman) was quite sure all would very much regret that Mr. White was not in a position to come back to that board according to the shareholders' wishes, and none regretted it more than the board itself. That, however, was their present position, and, as that was the only thing for which the meeting had been adjourned, the present meeting was, of course, at an end. He would just say that at the last meeting some friends of Mr. Davis stated that he was most anxious some terms of compromise should be arranged; and if he (the Chairman) recollected aright the terms were even mentioned. He (the Chairman) naturally supposed, and he ventured to think the shareholders did also, that those terms would have been forwarded to the board for their consideration, because they must all be well aware that at a meeting of shareholders it was utterly impossible to deliberate upon the terms of any compromise, and especially one of a character which necessarily involved so many important and critical considerations. It was with regret—great regret—he had to announce that no terms of compromise had been sent in; if there had been shareholders might be perfectly assured they would have received the most mature and calm deliberation at the hands of the board, because they had but one object—the true interest of the company. He was sorry Mr. White had not thought it desirable—or, perhaps, he should say that the state of his health did not allow him—to resume his seat; but all he (the Chairman) could say was that the remaining directors would do their best to serve the true interests of the company, and he hoped the shareholders would continue to repose such confidence in them as they hitherto had done. (Hear, hear.)

Mr. STAPLES took it that, as the object of the amendment had been disposed of, the present meeting reverted to the position occupied prior to the adjournment.

The CHAIRMAN ruled that it was utterly impossible to enter into any question beyond the letter of Mr. White.

Serjeant SLEIGH begged to dissent from that ruling. The shareholders had met here for the purpose *simpliciter* of knowing a result. They had heard the letter read from Mr. White, and to say that no further discussion could be gone into was treating them as children, and not as business men or shareholders who had a common interest in the company. He indignantly repudiated the manner in which the Chairman told them that when he had read Mr. White's letter the meeting was at an end, and protested against the meeting being adjourned in so summary a manner. He was not here to propose anything, but he could not suppose that this meeting was so influentially attended without some gentlemen wishing to express their views or making some proposition.

Mr. T. G. TAYLOR imagined that, as the object of the adjournment had been turned aside by the illness of Mr. White, their simple plan was either to adjourn again until Mr. White was better, or to listen to any other proposition that might be made. Were they to be told that Mr. White had been using his influence, or had the learned Serjeant some proposition to make?——Serjeant SLEIGH had none to make, and would take this opportunity of referring to an observation made by the Chairman at the last meeting that he (Serjeant Sleigh) went to Paris to see Mr. Davis, and was eager to tell what had taken place—he allowed it to pass by because he believed it had been made in ignorance of the facts. He never saw Mr. Davis in his life until he happened to be in Paris upon his own business, and when he did see Mr. Davis it was at the special request of Mr. White, the then Chairman.——The CHAIRMAN: Serjeant Sleigh, you are out of order.

Serjeant SLEIGH: I believe the meeting will exercise its own common sense in bowing to the authority of the Chairman—(cries of "Order, order")—they ought to be able to help themselves. ("Order, order.")

The CHAIRMAN: It is the first time, Serjeant Sleigh, I ever heard a gentleman tell a public meeting, which you now do, Sir, to disregard the right and authority of a chairman. I say, Sir, for the purpose of order, you must accept my ruling, and if my ruling is not respected I will never take the chair again. (Hear, hear.) Upon the question of fact, I submit that no shareholder should attempt to dictate to a chairman.——Serjeant SLEIGH: There has been no attempt at dictation.

A SHAREHOLDER: What steps do you intend to take?——The CHAIRMAN: You must bear in mind the position the company stands in—a meeting was called at which the old directors were invited to retire, and those now forming the board were solicited to take the affairs in hand; they were instructed to take the opinion of counsel, and to act upon it. The moment there was the slightest difference of opinion among the directors they at once convened a meeting of shareholders to consult them upon the matter, believing, of course, that Mr. White would attend the meeting to fully explain that his views were in direct antagonism to those entertained by the other members of the board. When they came to that meeting Mr. White was not present; they were dumbfounded, and instead a letter signifying his determination to retire from the board. There was a disposition that they should take action, but the resolution the board asked the meeting to pass was negatived. The result of the amendment was the whole and sole purpose of the present adjournment. Mr. White has retired, and the board would now go back to reconsider the whole of the matter. Bearing in mind all that Mr. Staples had stated at the last meeting suggesting a compromise, I will now publicly ask Mr. Staples, as Mr. Davis' friend—nay, I invite Mr. Staples—to send in to the board in writing those terms of compromise which he says he holds in his possession. (Hear, hear.) I ask the shareholders not to be misled by snares and delusions; but I solicit Mr. Staples to put into writing the terms of which he speaks, and send them into the board that they may be fairly considered—if he will do that the shareholders may rest assured they would be consulted upon the terms that may be submitted. I ask you, in spite of Serjeant Sleigh's professional zeal and anxiety which may influence some persons, to look to your own interests, and to disregard all statements that may be made by Mr. Davis' friends. I am perfectly aware that a large number of Mr. Davis' friends have purchased shares to come here and make statements which appear quite fair and honest; but we do not want any more statements—all we want is those terms put in writing. What can we, as men of business, propose to-day? I say fearlessly, in spite of Serjeant Sleigh's professional fire and eloquence, that the resolution having been negatived, and the result of the amendment having been made known, it is for the board to go back and re-consider the position they are in. I now ask Mr. Staples, on behalf of Mr. Davis, if he has terms to submit? I take the legal position, and I should be misleading the shareholders if I allow matters to be discussed, and we must not now do anything illegal.

Mr. T. G. TAYLOR: We can hear Mr. Staples' proposition. I admit a resolution will not be legal because this is a special meeting called for a special purpose, which you say has been averted. So we fall back upon your proposition.

The CHAIRMAN: I do not ask you to fall back upon my proposition until we have what we have been promised—some terms of compromise. If Mr. Staples has terms to propose why does not he propose them? We are all animated by a love of peace, and we wish to compromise; and I venture to say the shareholders would be the first to discuss the terms. We know more of the facts than you do.

Mr. STAPLES: It must be quite clear that in the present position of affairs no one can make any proposition, for the directors have decided that you mean litigation.——The CHAIRMAN: I must correct you. Do read the resolution.

Mr. STAPLES: I join issue with you. I am informed that one proposition was made by the board of directors.——The CHAIRMAN: This is not the place to discuss that question; but, as a matter of fact, I may inform Mr. Staples there have been two or three propositions.

Mr. STAPLES: I have been informed the door has been closed to all negociations.——The CHAIRMAN: Quite the contrary.

Mr. STAPLES: It is quite clear if a proposition be made it would not be received because there is no one to receive it. I have no doubt that any independent gentleman desirous of a fair and equitable arrangement could bring about the desired end very speedily. You have distinctly stated this meeting is at an end—otherwise, there are gentlemen present who are prepared to show what middle course should be pursued. It is very clear that Mr. White has thoroughly understood the position of the case. As to the ore contracts, I take the common-sense reading of the Articles of Association, by which those contracts seem to be perfectly legal, for those Articles state that "rough or manufactured ore can be sold here or elsewhere." Mr. Davis believes he is in a perfectly clear, legal, and honourable position. My position is a very awkward one, for I am known to be a friend of Mr. Davis', and it is very difficult for shareholders to disassociate this fact from the idea that I am as much as anyone interested in bringing about an arrangement. I stand as a large holder of shares, and as one who has lost a large sum of money in this mine. The question which suggests itself is which is the best course to pursue? An arrangement can be made with Mr. Davis; therefore, it is clear what course we should pursue.

Serjeant SLEIGH: I think Mr. Staples led the meeting *en masse* to believe that a proposition might be made—if that be so, let Mr. Staples make it.

Mr. ASTON (addressing Serjeant Sleigh): I have been told you are going to have 10,000*l.* to settle it.——The CHAIRMAN: Do not be afraid of that, for I will take good care to prevent it. (Hear, hear.)——Serjeant SLEIGH: I have no interest in this mine expect for the few shares I hold. (Oh! oh!)

The CHAIRMAN: Have you any proposition to make, Mr. Staples?——Mr. STAPLES: No.

The CHAIRMAN: If you have no proposition to make on behalf of Mr. Davis I will make one for you to carry to Mr. Davis. I will consent, on behalf of the directors, to legalise Mr. Davis' illegal contracts, and turn the ore contracts into money contracts if Mr. Davis will at once make out his accounts, and lay them fairly before us, and vouch them; and, if Mr. Davis will give back to this company the money which he put into his own pockets when those dividends were declared by which the price of the shares were advanced, and Mr. Davis sold his shares. If the proposition is accepted I will settle this matter at once. Is that the love of litigation or not?

Mr. STAPLES said he was a shareholder like themselves, and maintained he was advocating the right course for their pockets. If there was any feeling about it, and they were determined to go to law, then he had nothing more to say. Was the mine a good and sound one—it was badly managed; a large produce ought to have been made, but it was not made. When Mr. Davis came forward the mines were ready to be seized by those who had worked them. There was an absolute necessity that money should be obtained immediately, and the question was how was it to be obtained. Already there was some talk that these ore contracts were not legal—so that when Mr. Davis was invited to advance more money he made it a *sine qua non* that he should appoint a manager in whom he had confidence. He thought he was within order when he said the board had no communication whatever with their agent, Mr. Patrick; and, with the company in such a position, was, he would ask, the proposal made by the Chairman a proper one?

Mr. ASTON: Mr. Davis has got possession of the mine, and is "gutting" it.——Mr. STAPLES admitted Mr. Davis was in possession of the mine instead of someone else, who had seized it for their own good.——Mr. ASTON said the only difference was that Mr. Davis was working it for his own good.

The CHAIRMAN said all these remarks had arisen because one speaker was allowed to be out of order. A variety of statements had been made which he (the Chairman) could contradict—for instance, instead of Mr. Davis being asked to advance money with which to pay dividends, he believed the last "row" Mr. Davis had with the directors was because they would not take more money for the purpose of paying dividends. He repeated that any proposition coming from Mr. Davis he (the Chairman) would hear, but nothing else.

Sir LEOPOLD HEATH said the way to prove whether Mr. Davis was an upright, honest, and honourable man was for his friends to submit to the directors in writing any proposition they may have to make, and then for the directors to call a meeting to consider it. The shareholders had selected a body of directors, and to allow a proposition to be made except through them would be at least uncourteous, if not unprecedented.

Mr. ASTON would like to tell the shareholders a few facts about this Mr. Davis.

The CHAIRMAN said that would create an ill-feeling.

Serjeant SLEIGH rose to a point of order. He could not see how litigation could benefit them. Mr. Davis had no property in London, and was mortgagee in possession. Could they commit a more suicidal act than by refusing to seek some terms with Mr. Davis? If there were nobody else ready to do this, he was ready.

The CHAIRMAN: You said, Serjeant Sleigh, you rose to a point of order. You must not take so many liberties.——Serjeant SLEIGH: I am incapable, Sir, of taking a liberty. Why on earth does not someone make something like a tangible suggestion.——The CHAIRMAN: That is all we want.

A SHAREHOLDER suggested that three shareholders should be selected to confer with Mr. Davis, and report the result to a subsequent meeting.——The CHAIRMAN said he should rule that could not be put, and he should hope the shareholders would not be so uncomplimentary to the directors.

A SHAREHOLDER said they had elected a board of directors to represent them, and the matter should be left in their hands. They knew the present directors were working for the interest of the shareholders, and to his mind it was one thing in their favour not to give up the rights of the company, and were prepared, if necessary, to take proceedings against Mr. Davis. They cannot allow themselves to be overridden by a set of Yankees. The late directors were replaced by others because they had made their arrangements with Mr. Davies, and that was what the shareholders were now asked to legalise.——Mr. TAYLOR said, as the six months would soon expire, the directors should lose no time in taking what steps they might think expedient.

A SHAREHOLDER then proposed that a committee of shareholders be appointed to confer with Mr. Davis, and to report the result to an adjourned meeting.——Mr. GUTIERRIEZ seconded the proposition.

The CHAIRMAN said that he could not legally accept that resolution, and declared the meeting at an end.

A vote of thanks was passed to the Chairman and directors, which concluded the proceedings.

Amidst considerable noise and confusion, during which the Chairman and directors retired, Serjeant SLEIGH suggested that an informal meeting should be held, but by far the larger number of shareholders left the room. Upon the proposition of Serjeant SLEIGH, a barrister of the name of Mr. RIDDELL was voted to the chair.

Mr. STAPLES said the meeting just concluded had been specially called for going into this matter, and he thought shareholders ought to know something more of what was going on. He protested against any litigation being commenced. Mr. Davis was not going to be "bullied"—Mr. Davis was ready to make a fair and equitable arrangement.——(A VOICE: Then why does he not?)

A SHAREHOLDER deprecated any discussion after the directors had left the room. It was not only improper, but most insulting to the board, whom they had only very recently elected.——Mr. ASTON knew Mr. Davis well, and if they ever got one shilling out of him he (Mr. Aston) would eat his head. (Laughter.)

Mr. STAPLES said what he wished to advocate was the cause of peace; but he believed it to be a foregone conclusion that the present board meant litigation; or why had Mr. White retired? Mr. Davis was master of the situation, and would not listen to such a proposition as that made by the Chairman at the meeting just terminated. It was perfectly absurd. He repeated they could not do a wiser thing than open the door to negociation, nor a more unwise thing than to shut it.

A SHAREHOLDER (vehemently): To do anything now, and especially with this handful of shareholders, would be a direct insult to our board, who are very properly absent.

Mr. STAPLES said that Mr. Davis was willing to give the shareholders a dividend of six per cent. before he took any money for himself.

The CHAIRMAN asked Mr. Staples what authority he had for that statement?

Mr. STAPLES said it was not communicated to him, but to their late Chairman, Mr. White, which was evidence that Mr. Davis was doing that which was right and honourable.

The CHAIRMAN said such evidence must be afforded by some one or other. Was Mr. Staples in a position to afford that necessary evidence?—— Mr. STAPLES: Certainly not; but he was prepared to say that Mr. Davis was desirous of some amicable arrangement. The terms of compromise he had mentioned were embodied in a private communication to Mr. White after he had left the board, and had Mr. White had a majority at the board in all probability the negociations would have been brought to a successful conclusion, and Mr. White still chairman.

Serjeant SLEIGH was afraid they had lost sight of the reason why Mr. White had left the board. According to the letters it was simply for this reason. Mr. White was for peace and amicable negociations; his colleague were for war *a l'outrance*. Why object to Mr. Davis receiving two or three shareholders in the interests of the company? Let them now elect them, and arrange to meet Mr. Davis to arrange terms, and then request the board to call a special meeting, before which the terms could be laid. They could then soon see whether they were being played fast and loose with, or whether they were being treated fairly, honestly, and honourably.

A SHAREHOLDER reiterated what he had already said—that this matter should be left in the hands of the directors. If Mr. Davis was the honourable man which Mr. Staples said he was, and had done all this for the good of the shareholders, why did he not return some of the 300,000*l.* which he took from them. Shareholders should repose confidence in the board, who knew many things in connection with this matter that were unknown to the shareholders. Let them leave that matter in the hands of the directors. Mr. Davis had made advances—o Mr. Staples tells them—to pay off other debts instead of paying himself, but if this were the case it was, no doubt, with the object of keeping his clutches on the mine for a longer period. It appeared to him that they were not only being clutched by Mr. Davis, but he was now clutching them round the throat, and saying—"Your money or your life."

Mr. STRATTON supposed they should submit themselves as victims, and, therefore, should eat humble pie, and try to get something out of it. They could not punish Mr. Davis, because he happened to be out of the pale of the law, whether he had acted rightly or wrongly; and, as far as he had seen of American law, he should be opposed to going to law in that country, because whether they were in the right or wrong they would not obtain their rights. He, therefore, advocated the adoption of the proposition suggested by Serjeant Sleigh.

A SHAREHOLDER said it did seem most extraordinary that Mr. Davis should remain in Paris. If he wished to be honourable why did he not come here and face them?

Serjeant SLEIGH had also asked that question, and had had this answer—that Mr. Davis had been threatened with a criminal prosecution. Human nature was human nature. (A voice: "There's only one honourable human nature.") Mr. Davis thought it was not a very difficult matter to get a man to the Mansion House, and once there it was very difficult to get free, except through the Old Bailey. Hosts of honourable men had been taken to the Old Bailey, and tried and acquitted. He knew what feeling governed the commercial City of London. When men lose a large sum of money by a mine, or anything else, he knew how they smarted under it, and tried to impute a fraud. Many an honourable man had been placed in this way in a most unpleasant position. Mr. Davis said, "I am not going to wait like a sparrow to have salt put upon its tail, in order that it might be caught." (Laughter.) That was Mr. Davis's answer. Many an unfounded charge had been brought against an innocent man. He had many times been employed as counsel for as honourable men as any in that room. The last suggestion that had been made was that a few independent shareholders should confer with Mr. Davis, and if there was any difficulty in finding the requisite number he would come forward as one.

After some further discussion it was resolved "That in the opinion of the shareholders here present it is expedient that three or more gentlemen be appointed to put themselves in personal communication with Mr. Davis, and that the directors be requested to convene a special meeting to which the deputation may report the

result."——It was resolved that Mr. Serjeant Sleigh, Mr. Riddell, and Mr. Stratton be the committee appointed to wait on Mr. Davis.——The meeting then separated.

Subsequently to the meeting Sir Leopold Heath was appointed a director of the company.

BELSTONE MINING COMPANY.

The ordinary general meeting of shareholders was held at the company's offices, Royal Exchange Buildings, on Wednesday, Mr. JAMES WILSON in the chair.

Mr. F. R. REEVES (the secretary) read the notice convening the meeting, and the directors' report was submitted.

The directors reported that of the 3000 new shares created and offered to the shareholders applications for 2000 shares were received, which the directors duly allotted, reserving the remaining 1000 for future issue if it should be considered necessary. The sinking of the main shaft has been continued, and at the end of April last a depth of 74 fathoms had been reached, but at that point the sinking was suspended in order to extend the pumps, skip-road, and footways. Capts. Richards and Neill having advised that, in lieu of extending the present bucket-lift, a 30-fathoms plunger-lift should be fixed to the 71, so as to increase the pumping power and enable the sinking to be effected in less time and with greater economy, a contract has been entered into for the supply of the necessary pumps and materials, which are now being delivered on the mine, and will be fixed in the shaft with the least possible delay.

The directors regret that the unprecedented drought has somewhat impeded the operations in bottom of the main shaft, scarcely any rain having fallen in the district of the mine for about three months, owing to which the pumping-wheel was not driven fast enough to cope with the water in the shaft, and the men were consequently obliged for a time to suspend operations there, but were set to work temporarily on the lode in the incline shaft. Rain has since fallen, and it is hoped that no further interruptions will take place. The directors having reduced the number of miners working on the lode, the quantity of ore raised during the past half-year has been small; 13 tons were sold on May 21 last, and about 29½ tons still remain unsold, for which, however, as the copper market has improved lately, there is every prospect of realising better prices. As soon as the work of fixing the pumps, &c., in the main shaft has been completed the sinking will be at once resumed and pushed forward vigorously, in order to cut into the lodes in the 80 fm. level as soon as possible.

The CHAIRMAN said that the report which had just been submitted to them contained really all the information which the directors had to communicate, but if there was any point upon which the shareholders desired to ask any question, he would readily reply to it. He had only to propose that the report of the directors be received and adopted.——Mr. G. A. HILLIER seconded the motion.

A SHAREHOLDER regretted that the difficulty with the water appeared not to have been yet got over.

Mr. KER assumed it would only be very temporary, as it was usually extremely wet in the district, and a drought like the present was almost unheard of.

The CHAIRMAN said that was the case, and he might say that he himself had never been fortunate enough to go to the mine except when it was very wet. They had now, however, had four months drought, and, consequently, had not enough water to keep the machinery going. However, a few days' rain would put all right, and with the new machinery they would have no difficulty. The delay was annoying, but it must be remembered that the water cost them nothing, and that had they had to use steam the recent high price of coal would have done them much more injury than the drought.

The report was then unanimously adopted, thanks were voted to the Chairman and directors, and the meeting separated.

BIRDSEYE CREEK GOLD MINING COMPANY.

The annual meeting of shareholders was held at the offices, Austin-friars, on Thursday,—Mr. J. T. P. PECHEY in the chair.

Mr. W. J. LAVINGTON (the secretary) read the notice convening the meeting.

The report of the directors (which has already appeared) showed that during the past year 3801·96 ozs. gold have been obtained, realising 14,643*l*. 18s. 2d., at a cost (including 2148*l*. 4s 4d. expended on the Neece and West Tunnel) of 9927*l*. 5s. 7d., leaving a net profit, including sales of water, of 4909*l*. 3s. 4d. Two dividends, amounting to 3375*l*., have been paid. The balance at the credit of profit and loss account is 2916*l*. 1s. 2d., adding to this the amount of profit—1150*l*., advised to June 9—there remains a balance of 4066*l*. 1s. 2d. The dividend paid on June 30 absorbs 1875*l*., and the directors propose, with the sanction of the proprietors, to write off from profit and loss account the amount standing to the debit of Neece and West Tunnel account—686*l*. 2s. 6d. Deducting these two amounts there remains a balance of 1504*l*. 18s. 8d. to be carried forward.

The CHAIRMAN said he felt assured that every shareholder who had perused the report now submitted, and the statements issued from time to time of the working of the company's mines, must share the conviction which he was sure each director entertained—that a turning point had at last been reached in the history of this company. Although the directors had been from the first fully convinced that all the statements made and expectations entertained as to the value of the company's property would be borne out by actual results, still the progress made had been so slow, and an unlooked for expenditure necessary, there had been times when they were disheartened, notwithstanding their undiminished confidence in the ultimate issue. Now, however, they stood upon a very different footing, difficulties having been overcome and prospects most encouraging. The result for the past year had been substantially the same as the year previous—the directors had been able to pay a little increased dividend than in the preceding year, and hoped to be able to pay very much increased dividends in the future. The present results must not be accepted as to the future, although until the workings had thoroughly reached the blue lead there was little hope of making large profits. Last year they had an unusually short water season, and the Neece and West Tunnel was not finished, but still all the expenses were going on. That tunnel was now completed, and, although they were as yet working only drifted ground, there was ahead the unworked ground, which must, according to all indications, yield very large returns indeed. It was true that the last "clean-up" was disappointing until the causes were explained. Mr. Powers, in a letter to Mr. Bowe, a member of the board, says—

June 21.—I am only running Neece and West and Rigg's claims, and am buying 250 in. from South Yuba to keep up the two heads. I have not done anything like what I expected in Neece claim thus far this season, but I think I can make a better showing after awhile, when I can manage to keep in gravel, to keep the claim running all the day time; up to this time we have not had an average run of more than seven hours in twenty-four.

The report mentioned about the Stahr claim. That was a most valuable accession to the company, and when the tunnel was in—which it was hoped it would be by the next water season—they would be able to work two claims as well as the Neece and West, so that they were fairly justified in promising far greater results, especially when it is recollected that last year they could wash only up to July on account of the exceptionally dry season. For the future they hoped to be able to obtain one head of water to work the Neece and West claim throughout the year, and this year Mr. Powers hopes to be able to run up to November. The directors and shareholders were under a great obligation to their director—Mr. Bowe, who had during his visit to California in December last spent some time on the company's property, during which he succeeded in making the purchase of the Stahr water right and claim; indeed, words could not be found to express the value of the services rendered by that gentleman. In Mr. Powers they had a most able and efficient superintendent. All who visited the mine agreed that Mr. Powers was the best mining superintendent in California. Unfortunately too many companies had had what they used to know in California as "kid-glove superintendents," but in Mr. Powers they had not only a zealous and an efficient man, but one in every way eminently fitted for his position. He moved that the report and accounts be received and adopted.

Mr. STEELE seconded the proposition, and supposed that until the drifted ground had been passed through they could not get up to the blue lead.

Mr. BOWE explained that the workings were now in the blue lead, but the part being worked had been drifted. One blast had been made in what Mr. Power calls "solid ground," so that they would soon begin to disintegrate the whole mass.

The CHAIRMAN said the advantage the running had been to the company, even though washing had been carried on so short a period, was shown by the fact that the returns from the Neece and West claims for five months was $27,800, as against $7000 when simply working surface gravel. In the drifted ground there were three rich deposits found and worked up to the facings of the present ground; the present company had something like 800 ft. of unexplored ground, on either side of which gold had been extracted to the value of $1,000,000. So that there could be no possible reason to doubt that this company would realise equally satisfactory returns.

Mr. STEELE asked if the consolidated blue lead near to the bed-rock would have to be crushed?——The CHAIRMAN said it would if it were very hard. When the mill was last run they took out $7000 per week by drifting alone. He did not want to raise any hopes that would not be realised, but that was what the ground yielded when it was drifted. The extent of the company's claims was 260 acres, containing an amount of gravel that could not be worked out for 40 or 50 years by bringing all the water to bear that could possibly be obtained.

Mr. ALINGTON said it seemed to be inferred that some parts of the blue lead might require crushing.

The CHAIRMAN said that was so, and the necessary machinery was on the spot, requiring only the expenditure of 200 or $300 for repairs.

Mr. BOWE said that when on the mine he took a pan of the dirt, and drifted $3 or $4 out of it, and just before he left he picked up a piece containing $8, which he brought home and gave to the secretary.

The CHAIRMAN, in reply to a question, stated that they had nearly another dividend in hand, and there were two or three runs yet to come in. He trusted they might be able to keep up the dividends. They did not begin to pay off the debentures till 1876. The claims were not yet fairly opened, and would not be till the blue lead had been thoroughly worked into. Notwithstanding all their difficulties and drawbacks, they had paid dividends from the time the company started.

The reports and accounts were received and adopted.

Mr. G. BATTERS had much pleasure in proposing the re-election of Mr. Pechey as director. It was not possible to have a more efficient Chairman, or one who attended more assiduously and faithfully to the interests of the company; and not only so, but Mr. Pechey thoroughly understood the work in which he was engaged—a fact of no mean importance. He (Mr. Batters) would take the opportunity of stating that they had also been singularly fortunate in securing the services of Mr. Powers, in whom they had a most efficient officer, and under whom there was an honest administration.

Mr. STEELE seconded the proposition. He had attended each meeting of the company, and had been extremely gratified with the able manner in which Mr. Pechey had discharged the duties of Chairman. He was sure their Chairman by by his exhaustive and encouraging remarks had given the shareholders generally great confidence in the value of their property, having stated on several occasions that he believed it would turn out one of the best hydraulic mines in California.

The resolution was put and carried unanimously.

The CHAIRMAN thanked the meeting for this renewed mark of confidence, and stated that if he were not deserving all that had been said about him, all he could say was he would endeavour to be so. One thing he could assure them was that so long as he has the honour of occupying a seat at the board, and so long as his colleagues did him the honour of electing him to the chair so long should it be conducted fairly, honestly, and in a straightforward manner. He would reiterate his opinion that he believed they were going to make Birdseye one of the most successful hydraulic mines yet introduced to the British public. As to the suggestion of Mr. Batters that a vote of thanks should be given to Mr. Powers, he (the Chairman) was quite sure should he make such a proposition he would have the unanimous approval and support of the shareholders. He then moved that the best thanks of the shareholders be given to Mr. Powers, their superintendent, for the tact and energy displayed in carrying on the operations of the company.

Mr. STACPOOLE seconded the proposition, which was put and carried.

Mr. BOWE mentioned that while in California, two years since, he appointed Mr. Powers to his present important position, although he had only known him two days. It, therefore, afforded him especial satisfaction to bear testimony to his indomitable zeal and energy, no less than to his integrity and efficiency—a more able, painstaking man for such a position could not be found in California.

Messrs. Rogers and Bennett were re-elected auditors.

Mr. ALINGTON proposed a vote of thanks to the Chairman and directors. The whole of them, he might say, were personal friends of his own, and it was a subject of great congratulation that they had such a board.

Mr. HUGHES seconded the proposition, which was put and carried.

Mr. KITCHING having acknowledged the vote, the proceedings closed.

TYLLWYD SILVER-LEAD MINING COMPANY.

The ordinary general meeting of shareholders was held at the company's offices, Gresham House, Old Broad-street, on Wednesday, Mr. S. F. PORTER in the chair.

Mr. D. FORREST (the secretary) read the notice convening the meeting, and the accounts, together with the reports, of which the subjoined are abstracts, were submitted:—

The directors referred the shareholders to the manager's report for what has been accomplished since the commencement of the company's operations. As the south lode in the cross-cut at the 20 is opening out rich, and it is known there is a valuable run of ore in the shaft at the mouth of the adit, at a depth of only 13 fathoms, the distance between these two points being about 30 fathoms, it may safely be calculated there is a good run of silver-lead ore for the whole of this distance, which can be stoped away and dressed so soon as the dressing machinery is ready. This south lode is the principal point to which the directors have hitherto devoted their attention, but they have not been unmindful of other places; and they have opened out a promising lode, hitherto unknown, running south-west from the middle lode, which is now producing 1½ ton of silver-lead ore per fathom. The reason why the dressing machinery has not been erected is that the directors were of opinion it would be better to wait until they found there was sufficient ore to dress. This they have now discovered, and the machinery will be erected without loss of time, when they will commence to dress the ore already raised and in sight, with the rich halvans which are lying on the surface. The directors have, in conclusion, to congratulate their co-shareholders on the possession of an excellent property, which they have every reason to believe will in a short time turn out to be all that has been predicted of it by practical and experienced miners.

An extract from Capt. Absalom Francis's lately published book on Mines in Cardiganshire is appended to the report, wherein it is stated by him that "the present company are now putting up a large water-wheel, 40 ft. diameter, and good dressing apparatus, with extensive crushing power, &c., which will be worked by the River Rheidol, and where there is an abundance of water in every season of the year. The great desideratum is to get this machinery quickly to work. As soon as this shall be done success is an accomplished fact, for there are many thousands of pounds worth of lead ore in the refuse that can be made saleable at the present price of lead ore; worth 15*l*. per ton, for the sum of 6*l*. per ton, and this is a high figure to pay for dressing it. This refuse ore will serve to make a real good dressing flooring during the time of opening the mine properly by stoping down the rich portion of the veins, and will give ample time without pressing for every desired purpose. Looking, then, at this property as it really stands, I think it would be difficult to find another in a similar position. First, it is a well known fact that rich courses of ore are existing at the 10, under adit, on the middle lode. Next, it is quite as clearly ascertained that there is a very large quantity of good paying ground in the old stopes above this level which can be worked as soon as cleared. There is, besides, the fact that before the adit forebreast on this lode there are very extensive courses of ore which have been worked by hand-power from surface as deep as the old men could draw the stuff, and there can be no question of finding these courses of ore rich when the level has been extended eastward far enough to get under them. On the south lode all that has been done shows that not only have good courses of ore been taken away by former workers, but that good courses of ore have been left standing by them as well, and soon as the present shaft has been sunk to the required depth, which will only occupy a few months, there is a certainty here of opening out good paying ground. Then, again, we have to look at the probability of finding very rich courses of ore at the junction of the lodes before referred to, and the probability of finding the north lode producing lead ore in paying quantities. Taking all these facts, and looking at the property fairly, and with an impartial feeling, no one can doubt that these shares must go very high as the mine is opened out from month to month, and I shall not be surprised if eventually the profits reach the very respectable figure of 10,000*l*. a-year, or even more."

The CHAIRMAN, in moving the reception of the report, remarked that during the past week Mr. Forrest and himself had visited the mine, as he was anxious to see how the works were going on, and he was glad to be able to tell them that, so far as the machinery and general arrangements at surface were concerned, nothing could be more perfect. They had the advantage of a constant supply of water from the river, so that even the excessive drought which had occurred recently had not affected them. The hauling machinery was rapidly being got in order when he was there, and they would be glad to learn that it was put to work on Monday, and doing well. Everything underground, likewise, appeared to be going on as satisfactorily as could be desired. In their examination underground they had the assistance of Mr. Walter Eddy, the mineral agent to the Marquis of Bath, who seemed to be perfectly well pleased with all he saw. Capt. Paull, their manager at the mines, had been requested to attend the meeting, and would point out, with the aid of the plans and sections, what had been done at the mines. He concluded by moving that the report and balance-sheet be approved and adopted.——General NUTHALL seconded the motion.

Mr. FORREST suggested that previous to Captain Paull describing the plans and sections it would be well for him to read Capt. Eddy's report, which would be the more interesting if Capt. Paull would indicate, as he read, the points referred to. Subjoined is Capt. Eddy's report:—

I will begin my report by giving a summary of the machinery erected and of the work done since my former inspection of the mine in January, 1873.—Machinery and erections: 1st, Cut foundation and built wheel-pit for 40 ft. water-wheel.—2nd, Erected a 40 ft. by 4 ft. water-wheel, with pumping and winding gear complete.—3rd, Put up launders over River Rheidol at great height, for the necessary supply of water to the wheel from the river.—4th, Put two wire-ropes, each 270 fms. long, one for pumping, the other for winding with uprights, a line of pulleys and bob complete from wheel to new shaft.—5th, Pit-head.—6th, Rebuilt smiths' shop, store-house, carpenters' shop, and counting-house.—7th, Laid down 70 fms. of railway, from engine-shaft in south adit to surface.—8th, Repaired and secured mouths of the different adit levels.—9th, Put down 20 fms. of pumps, 8 in. diameter in new shaft.—10th, Raising and carting stone from quarry in neighbourhood for water-wheel, offices, buildings, &c.—Sinkings and Drivings: Sunk a new engine-shaft from surface, 12 ft. by 6 ft., 33½ fathoms; this shaft is closely timbered for 6 fathoms, and then sunk in rock. Drove from bottom of this shaft a cross-cut to cut the lode 6 fathoms. Drove in lode after cutting it to east 2 fathoms; ditto west, 3 fathoms. Drove on a south-west lode 10 fathoms. Drove a cross-cut north to cut north lode 9 fathoms. Drove to east on this north lode 34 fathoms. Besides the actual sinkings and drivings named, a great deal of work has been done in clearing out and repairing old levels and sumps, and putting them all into a good state of repair for the future opening out and working of the mine. All these have been done in a good and workman-like manner, and were absolutely required for the proper development of the mine. The machinery is all strong and new; the shaft is large, well adapted for pumping and winding, and the levels are carried to a good height and width, suitable for laying down tramways.

In my remarks I shall only refer to the different lodes as they now appear in the workings made by the present company. I will first notice the trial made on what is called the north lode, in which 20 fms. have been driven west and 14 fms. east from the cross-cut. Little or no ores of value have been found in these drivings. The vein is smaller than it was in the trials made nearer the surface. The strata on each side of it is of a black shaley character, that in my judgment is not favourable for the production of lead ore. I would not, therefore, recommend this lode being driven upon further at the present depth, as there are much more important points in the other lodes requiring good trials, and to which your energies should be directed. This lode can be cheaply proved at a greater depth by cross-cutting to it from the 20 fm. level.—Middle Lode: Nothing has been done on this lode since my examination and report of the mine in January, 1873, so that it is exactly in the same state then as now, and the remarks I then made are applicable to it at the present time.

South Lode: This lode was intersected by a cross-cut from the new shaft 33½ fms. below surface and 20 fms. below adit level, and driven upon 2 fms. to the east and 3 fms. to the west. The lode is 5 ft. wide in this part, and composed of similar rocks to those which enclose it, with strings of spar and lead ore of different thicknesses running throughout it. This lode, so far as proved in these new workings, is of a most promising character, with a fine blue flaggy strata on each side of it. It is the same lode as the one proved in the old shaft at the mouth of the adit level, referred to in my former report. The distances between these two shafts is about 50 fms., and from the appearance of the lode in the present drivings, coupled with the ore going down in the old stopes above, I am of opinion that a capital piece of ore ground will be laid open between these two shafts and the adit and 20 fm. level. I should advise this vein being driven upon with energy, both east and west, from the bottom of the new shaft, and a communication being made between the two shafts for opening out this ore ground and for the purposes of ventilation. A good deal of water is oozing from this vein near the present forebreast, which I have no doubt comes from stopes made by the former workers in the adit above. Looking at the compact and close nature of the lode, I consider this an indication that good ore will be found between these two levels. Another lode has been met with in the driving from the bottom of the shaft, which Capt. Paull has named the south-west branch. This lode averages from 2 ft. to 4 ft. wide, and is composed of clay-slate, strings of carbonate of lime, and lead ore. This is a very promising lode, and appears to improve as the drivings in it are extended. As this lode is going into wholly new and untried ground, and contains good ore, I would recommend the drivings in it to be pushed forward with all despatch, and I consider it a capital trial. From what I have said, it will be noted that the principal workings made by the present company have been mostly of a preliminary character for opening out and preparing to prove the mine below the former workings. In my judgment, the mine so far is opening out well, and with most encouraging prospects of proving a good and lasting one. There is an abundant supply of water-power from the River Rheidol at all seasons for pumping, winding, and dressing the ores, and for all other requirements of the mine. The water in the workings below is very light, so that the mine can be proved and worked at a comparatively small cost.—W. EDDY.

Capt. PAULL said that the south-west branch was in entirely new ground. The mere wall which they had seen had opened out until they got into the lead they now had. The lode in this place had become richer, until on the previous day it was worth 2 tons per fathom. There were 30 fms. above it to surface, and 70 fms. between it and the mouth of the adit. The north lode had never been seen until recently. The ore had been analysed, and proved to be a very good lead ore, but contained very little silver. On the other lode they would probably soon be getting ore worth fully 2 tons per fathom.

Capt. HAMILTON observed that it appeared from what the agent had said that they had 600 fathoms of ore ground laid open. They had also lead to the east of the engine-shaft, worth 2 tons per fathom, and the same lode was now being cut 20 fms. below the adit, so that estimating the value at 2 tons per fathom, they would have upwards of 1000 fathoms of ore ground laid open at that level. It would be impossible thoroughly to understand the workings without seeing the mine, but the meeting would readily understand that they were laying open much reserve ground. In the adit level they had discovered the south lode, which from present appearances will be found highly productive, and when they had worked a little further upon this he was afraid to say how many fathoms of ore ground they would have laid open. He was perfectly satisfied with the way in which Capt. Paull had carried on the operations at the mine, and he had no doubt that when the dressing-floors and crushing-machinery were ready they would soon have ore at market. At present they had only issued half of their capital, and as several shareholders were desirous of taking more shares if they could be obtained at par, it was proposed to make a further issue of shares among the shareholders. He should himself take an additional 100, and hoped his co-shareholders would follow his example.

Gen. NUTHALL said that everything appeared to him so thoroughly favourable that he would certainly double his holding, and several shareholders present expressed the same view.

The reports and balance-sheet were then unanimously adopted, the election of Mr. S. F. Porter as a director was confirmed, and Mr. Puckle was re-appointed auditor; the proceedings terminating with the usual complimentary votes.

SOUTH WARD MINING COMPANY.

At the three-monthly general meeting of shareholders, on Tuesday (Mr. R. MCCALLAN in the chair), the following accounts were submitted to the meeting:—

Balance due to treasurers at the last meeting		£ 511	14 8
Twelve weeks labour costs		583	13 3
Merchants, on account		405	8 6
Discount on calls, &c.		45	14 9
Total		£1546	11 2
The receipts were, for sale of 9 tons 3 cwts.			
3 qrs. lead ores, at 20*l*. 13s. 6d. per ton ...	£ 189 15 4		
For calls	1198 8 6=	1338	3 10
Leaving a balance due to treasurers		£ 158	7 4
The liabilities of the mine, including costs payable before the next meeting, amount to		1362	19 5
Against which the assets, consisting of arrears of calls and lead ores, amount to		680	1 6
Leaving a balance against the mine of		£ 682	17 11

The CHAIRMAN said: Those are the accounts we have to lay before you to-day. The cost-sheets, merchants' bills, and vouchers are on the table, and open to your inspection and analysis.

The accounts, having been duly examined, were passed and allowed, the minutes of the preceding meeting having been previously read and approved.

The report of Capt. Richard Goldsworthy was read, which shows that although the mine at the present moment is not answering expectations, the prospects of an improvement are very great. Every effort is being made to get the shaft down to the 90, when it is expected the intersection with the North Hove lode will take place. The continuation of the drivage north and south on the eastern lode, and sinking Thomas's engine-shaft, are the main points of operation, and with a vigorous development of one or two other points, the shareholders may anticipate better times.——A call of 5s. was made, which meets all the requirements of the mine.

A vote of thanks to the Chairman terminated the proceedings.

SOUTH CARADON MINING COMPANY.

At a general meeting of shareholders, held at the mine, on Tuesday (Mr. RICHARD HAWKE in the chair), the accounts for February, March, and April showed a profit of 1091*l*. 19s. 5d. A dividend of 1024*l*. (2*l*. per share) was declared, and the balance of 3105*l*. 5s. 11d. carried to credit of next account. The following report was read:—

July 14.—The mine is looking well; and, on the whole, a little improved since the last meeting. We have resumed the sinking of two of our shafts, and are prosecuting every place with vigour where we consider there is a probability of success. I am also happy to find, owing to the advance in copper and the reduction in the price of coals which have taken place, you are again in the position of being able to declare an increased dividend.—JOHN HOLMAN.

SOUTH CARN BREA MINING COMPANY.

The three-monthly meeting was held at the mine on Friday, the purser (Mr. PIKE) presiding. The accounts showed a profit of 731*l*. on the three months' working; and, after defraying the debit balance from last account, a credit balance of 431*l*. was carried to next account. The report of the manager and agent, Captains Rich and Knotwell, is exceedingly good, showing one point to be worth from 80*l*. to 100*l*. per fathom, one point 40*l*., another 30*l*., and another 20*l*. per fathom, all points being valued at the present price of tin. The following was the report:—

Since your last general meeting we have extended the 164, east of engine-shaft, 10 fms., and about the same distance west. The lode in the end west has a promising appearance, and yields low-quality tinstone. In the east end the lode is worth 8*l*. per fathom. The 150 is extended east of the engine-shaft 10 fathoms. The south part of the lode, which is being driven on to make speed, is unproductive. The main, or tin-portion of the lode is standing north of the level for 5 fms. behind the end. This, however, will soon be proved by stoping. A stope in the back of the 150, east of cross-course, is worth 20*l*. per fathom. The stope west of cross-course is worth 30*l*. per fathom. The lode in the back of the 150, west of winze, is 20 ft. wide, worth 80*l*. per fathom. The lode from this point eastward to near the present end has a good appearance, especially towards the bottom of the level, which in certain places is worth 100*l*. per fathom. A stope in the bottom of the 130, east of winze, is worth 40*l*. per fathom. The winze referred to stands 75 fms. east of the engine-shaft, and as the lode here is valuable and of great width, we think it advisable to make the winze mentioned available for a working shaft. With this object in view we have began to sink on the course of the lode diagonally below the 80 fm. level, and have completed the shaft to the 88 fm. level. A rise is being made in the back of the 108 to meet this shaft, which we hope to hole in about three months. The mine is looking well, especially in the bottom of the 150 fm. level east. We are, therefore, anxious to see the shaft made complete to the 150, so as to sink the same in a course of ore, and, therefore, open the mine in depth as rapidly as possible.

The CHAIRMAN said it was a great pleasure to the agents to appear before the shareholders with such a satisfactory state of accounts, and with such a favourable report. A profit of over 700*l*. on three months' working in a small mine like South Carn Brea was something highly gratifying to all concerned in these dull times. South Carn Brea had been rather an exceptional mine, working 18 months without a call, and all debts paid off, and a good balance at the bankers.——Capt. RICH complained of several anonymous letters respecting the propriety of sinking the eastern shaft, and afterwards explained, in answer to some of the shareholders, that it would be better to sink a new shaft in the heart of the ore than to sink a shaft 75 fms. away, and drive a level to the ore.——Capt S. DAVEY stated that he had inspected the mine for the lode, and was perfectly satisfied with the manner in which it was being worked, and with the management of Capt Rich, who had done all in his power for the benefit of the shareholders.——Some further discussion ensued on the advisability of sinking the eastern shaft deeper, or sinking a new shaft, and the consideration of the subject was finally adjourned.——The difference in the price of tin 12 months ago and at present will make a difference in the credits of 801*l*. on the three months' workings. Twelve months ago tin sold at 73*l*. 15s. per ton, now the price is 55*l*. 15s., or 18*l*. per ton less. This decrease has seriously affected other mines not so rich as South Carn Brea, which bids fair to speedily become a dividend-paying mine.

GUNNISLAKE (Clitters).—The adventurers held a four-monthly meeting at the mine on Monday, when a very satisfactory report and statement of accounts were presented. Since the last meeting a small profit has been made, and this, added to the sum brought forward from the previous account, gives the mine a credit balance of close upon 1000*l*. Out of this a dividend might reasonably have been declared, but the adventurers adopted the safer and more judicious plan of carrying forward the balance to the credit of the next account, a course of action that might have been advantageously adopted by other mines, which now see the folly of having acted in undue haste in declaring dividends out of the first available sum that came at their disposal. The shareholders in Gunnislake (Clitters) have not received dividends for some years, but in standing by the concern and continuing its development they have been very materially encouraged by the extreme liberality with which they have been met at all times by the Duchy authorities as the lords of the mine. As Capt. Skewis stated, the Duke of Cornwall is one of the best mining lords in the county. Although under the provisions of the lease the adventurers are liable for 1-20th dues, they have for a con-

siderable time past been paying only a nominal sum, and this is but one of many similar instances of generosity on the part of his Highness, which might be well imitated by other lords. It is more than probable that at the next meeting a dividend will be declared. Copper ore of the estimated value of 1100*l.* will be sold next week, and if this sum is realised it will yield a profit of 300*l.* on the cost of production. Before the next meeting another parcel will be sold, on which also a good profit is expected, so that at the end of the coming four months the adventurers may look forward to a more than usually satisfactory balance-sheet. The mine at the bottom of the 164 has a course of ore which Capt. Skewis says is one of the richest in the two counties, varying in value from 50 to 80 per cent. of copper. The meeting was presided over by Mr. J. C. Isaac, of Liskeard, and that gentleman read the accounts, which showed that there was cash in hand from the last meeting of 880*l.* 11s. 4d.; copper ores sold, 1335*l.* 14s.; discount on merchants bills, 8*l.* 10s. 2d. The expenditure has been 1277*l.* 8s. 9d.; four months labour cost and sundries, 43*l.* 1s. 4d. Balance now in hand, 904*l.* 5s. 5d. The agents' report states:—"We consider the prospects of the mine are better than we have seen them for some time, and should the lode cut good from the bottom of the shaft at the 176, as we believe it will, the value of the mine will be considerably increased." In concluding their report the agents very strongly recommend the sinking of a shaft at Chilsworthy Beam, as by so doing they would be opening up almost a new mine in that direction.

WHEAL UNY.—At the quarterly general meeting of shareholders held at the office, Austinfriars, on Friday (Mr. Walter Pike in the chair), the accounts showed a loss on the three months' working of 219*l.*, and a debit balance of 1294*l.* 17s. 7d. after charging 725*l.* on account of an extra month's merchants' bills, in order to bring up the accounts closer. A call of 4s. per share was made. The agents' report was considered very satisfactory. The 160, west of engine-shaft, is improving.

BRADDA (Isle of Man) MINING COMPANY.—At an extraordinary general meeting at Douglas, on Monday (Mr. W. F. Moore, H.K., in the chair), the Chairman stated that it seemed to be the almost unanimous opinion of the shareholders that the mine should only just be kept going until a favourable opportunity for disposing of it presented itself. In reply to a question, Capt. Barkell stated that they had about 120 tons of copper and about 20 tons of lead, the whole being worth about 600*l.* There has been no improvement in the mine recently. There are stones of lead, but not of commercial value. There is, however, one part of the mine which has never yet been properly tried, and that part is good enough to sell any mine in the kingdom. He referred to the ground about Spittall's shaft, and was strongly of opinion that it should be given a good trial, and that it would be well worth while to do so.——Capt. ROWE felt confident that they were not likely to succeed in selling the mine for one or two years, and that if they went on the last call which the company could make would be expended, in all probability, without effecting any practical results. That call would in no way suffice to meet the requirements of the mine or to give it that trial which it must have before anything can be realised out of it. This company has expended about 30,000*l.*, and has done a large amount of work; but it is quite evident that that work has been done for the future and for someone else. The mine requires new capital as much as ever it did when this company took it up, and he thought that this call of 2600*l.* would be a mere drop in the bucket towards its proper development, and if they went on expending it they would simply be doing that much work for some other company to come in afterwards and profit by it. All that he would suggest being done with regard to the further development of the mine was to spend a few hundred pounds in the trial in the neighbourhood of Spittall's shaft. He then moved, as the response of the shareholders had been almost unanimously in favour of discontinuing the working of the mine, that that course be adopted with regard to the old mine, and that the directors take steps to dispose of the mine at such time and in such manner as they think desirable. His belief is that there is in Bradda a great and good mine, if there was only a sufficient amount of capital to develope it. Where they have to seek this development is in depth, and in the extension of the levels north and south to a greater extent than they have hitherto done. If that course were adopted, he believes there is in Bradda as good a mine as there is in the country; but it would be impossible to do this with their capital. No doubt, however, someone some day will realise it. All that they have done is simply to have performed a certain amount of work for someone else who may come after them. The motion was ultimately carried unanimously; and with regard to the suggested development at Spittall's shaft, it was decided that it should be left to the directors. The meeting, however, seemed to be of opinion that no expense should be incurred even there, if it involved the necessity of making the other call.

ABERDAUNANT LEAD MINING COMPANY.—A meeting was held on Monday; Mr. C. S. Hill in the chair. It was stated that since the last meeting the exhaustion of the capital rendered it necessary to submit to the members proposals for additional assistance to carry on the explorations. These proposals assumed the form of mortgage debentures, and although a sum of about 2000*l.*, with a contingent provision of a further sum of 500*l.*, was the result of the appeal, with the exception of about 200*l.*, the whole of the amount was contributed by the directors and one shareholder. Captain Toy reported that the present aspect of the mine warrants the expectation of discoveries of lead deposits. The report and accounts were received and adopted. Mr. W. L. CROWE was re-elected director.

FOREIGN MINING AND METALLURGY.

There has been very little business passing in copper at Paris, and the market has exhibited in consequence some feebleness. Chilian in bars has made 84*l.* per ton; ditto, ordinary descriptions, 81*l.*; ditto, in ingots, 88*l.*; English tough cake, 87*l.*; and pure Corocoro minerals, 83*l.* per ton. The Marseilles copper market has been tolerably firm; prices have not varied. The general aspect of the German copper markets has been scarcely modified; a moderate amount of business has, upon the whole, been passing, and prices have been supported with tolerable firmness. Quotations for tin have given way at Paris; Banca, delivered at Havre or Paris, has made 108*l.*; Straits, 105*l.*; and English, delivered at Havre or Rouen, 102*l.* 12s. per ton. At Rotterdam transactions in tin have been comparatively insignificant. Disposable Banca has been held at 57¾ fls. without finding sellers. For delivery at the next great sale of the Dutch Society of Commerce the quotation is 57 fls. At the next sale of the Society of Commerce, on the 29th inst., 22,100 ingots of Banca will be offered on the usual conditions. Billiton has found purchasers at 56 fls. The German tin markets have been very quiet; at present prices have not varied. Lead has sustained its price pretty well. French lead, delivered at Paris, has brought 21*l.* 4s. per ton; lead from other sources, delivered at Havre, is quoted at the same price. A good demand has prevailed upon the German lead markets, and prices have ruled firm. Zinc has been pretty well sustained at Paris and Marseilles. There has been no great amount of business upon the German zinc markets, but prices have ruled firm.

The condition of the Belgian iron trade may be summed up in the statement that there are now many sellers, and few serious buyers. Nevertheless, confidence is sustained, and some great works are, it is said, disposed to issue circulars at an advance on current rates. The requirements of consumption, it must be admitted, are, however, neither very pressing nor very considerable. A statement that Belgian forgemasters had been traversing South Staffordshire, and offering Belgian iron at 30s. to 40s. per ton below English rates, is pronounced a *canard*; certainly, the statement appears improbable upon the face of it. Notwithstanding the present troubled state of English metallurgical industry, it would still be extremely difficult for Belgian ironmasters to compete seriously with English firms upon their own markets. The Cockerill Company is establishing furnaces upon the Whitwell system, at its Seraing Works; these furnaces are intended to be devoted to the production of Bessemer pig for the company's new and old steelworks. The Sclessin Company is proceeding rapidly with the erection of some blast-furnaces of altogether modern construction. The establishments of the Couillet Company are also in full re-organisation; differential trains on the Lauth and Deby system are being introduced, and the use of Danks' puddling furnaces is also under consideration. The St. Leonard Company (Liége), for the manufacture of iron, steel, &c., will pay, in August, a dividend for 1873-4 at the rate of 3*l.* 4s. per share.

The last adjudication for coal required for the Belgian State lines resulted in orders being definitely given out. This was, perhaps, the best course the administration could adopt, as we must not expect to see prices for some time descend to a lower point than the terms which were offered by the Liége basin on the occasion of the adjudication. The general condition of the Belgian trade remains much the same, but the animation of the market has somewhat declined, as water communication is closed for the present between Charleroi and Paris; prices have been maintained tolerably firmly at their former level. The least incident appears to promote an upward tendency in prices. The attention of the Belgian industrial world has been a good deal occupied with a dispute between the management of the Great Central Belgian Railway and the Administration of the Belgian State lines. Whatever opinions may be entertained upon the subject, there is a unanimous impression that Belgian industry will have to pay all the expenses of the conflict.

There is very little to report with respect to the French coal trade; the activity in business, of which a continuance had been hoped for, has been checked with the closing of the canals, and for the present affairs must be said to be extremely quiet. Attempts are being made to bring about once more an advance in quotations, and in default of any better argument to support such an advance there have been rumours of a probable future scarcity of railway plant. Just about this time last year similar rumours were circulated, and it may be fairly said that such apprehensions are premature, and that they are not justified by the actual facts of the case. The Paris market is very well supplied with coal for domestic purposes; and, as regards coal for industrial purposes, the supply may be said to be for the present excessive. There is nothing fresh to note with respect to the coal trade of the Nord and the Pas-de-Calais; as regards the Loire and St. Etienne basins, the state of affairs is still rather bad, the stocks which had accumulated not having been yet disposed of.

There is a rather general impression that an improvement will shortly take place in the French iron trade. This improvement is, however, checked and impeded for the present by the grave political pre-occupations which weigh upon French society. Intelligence from Champagne reports at the same time some animation in affairs, while the price of many articles has advanced. In the Nord there has been a good current of affairs. In the Meurthe-et-Moselle pig has been firmer, and cannot be purchased below 3*l.* to 3*l.* 2s. In the South the situation appears to have experienced scarcely any change. The confidence of commerce seems to revive, and the horizon appears to clear up a little, but it would be imprudent, nevertheless, to pass from one excess to the other in the excitement of the moment, and to endeavour to force prices up too rapidly. Such a course would have the effect of checking again the current of affairs which begins to present itself in a satisfactory fashion, and delaying the revival which is impatiently anticipated. Coke-made iron, first class, has been quoted in Champagne at 8*l.* 12s. to 9*l.* 2s. per ton; and charcoal-made iron at 10*l.* to 10*l.* 8s. per ton. Sheets, coke-made, have realised 10*l.* 8s. to 10*l.* 12s. per ton; and sheets, charcoal-made, have realised 11*l.* 4s. to 11*l.* 8s. per ton. In the Nord 8*l.* 16s. per ton is asked for first-class merchants' iron. At Paris construction plates have realised 12*l.* per ton.

A new concern has been organised in Belgium, under the style and title of the Marcinelle Metallurgical Works Company. The capital of this undertaking has been fixed for the present at 76,000*l.*, with power to issue obligations to the extent of 20,000*l.* The Carvin (Pas-de-Calais) Colliery Company will pay, Aug. 17, the balance of its dividend for 1873, or 4*l.* 16s. per share.

FOREIGN MINES.

ST. JOHN DEL REY MINING COMPANY (Limited).—Advices received June 30, 1874, per Liffey, dated Morro Velho, May 29.

At the Excavation B we continue to drive northward, and we are also rising towards A, but for the present there is no appearance of the north or footwall.

PRODUCE EXTRACTED.—The gold return for the second division of May, being a period of 10 days, amounts to 6706·9 oits., or 773·1950 ozs. troy. It has been derived as follows:—

	Oitavas.		Tons.		Oits. per ton.
General mineral stamped	6270·4	from	926	=	6·771
Re-treatment	436·5			=	0·471
Total	6706·9	,,	926	=	7·242

Oits.	Ozs. troy.	Tons.	Oits.	Ozs. troy per ton.
or 6706·9	= 773·1950,	from 926	= 7·242	= ·8342

The foregoing produce is less than we expected to have obtained during the division, both from the appearance of the mineral received on the spalling-floors and from the assay of the sand.

Morro Velho, June 1.—MEASUREMENTS OF EXCAVATIONS.—I beg leave to advise the result of the measuring of the excavations made to-day, showing their dimensions in general lines:—

Excavation A.	Fms.	ft.	in.
Length on the lode from east to west	16	1	6
Width of driving at eastern end	1	5	9
Width of lode at western end	5	4	6
Height of roof (above stopes) at sump	12	2	8
Excavation B.			
Length opened east and west	7	4	5
Distance driven across the lode	6	1	2
Height of roof above level	2	5	9

During May the sump in the eastern part of the excavation A has been sunk 8 ft. vertically. It will be seen from the increased length of this excavation that the driving both east and west is being continued. We are specially pressing this duty eastward, as the lode is still wide, being in the line of dip from the sump of shaft A, a width of 4 fathoms, the driving eastward at the sump being only about 2 fathoms.

The contract plan is working well, both as regards driving, sinking, and stoping. The hauling of mineral during the past week gives us a daily average of 139·5 wagons per diem.

Advices received July 15, 1874, per Neva, dated Morro Velho, June 17, 1874:—

MINE AND MINING WORKS.—The operations in this branch have been regularly carried on, and the duty obtained continues to be satisfactory compared with the means at command.

The attendance of Brazilian borers hardly suffices to ensure a fully supply of mineral, especially when holidays interfere with their attendance.

The daily output for June, up to and including the 16th current, gives an average of 142 wagons of mineral delivered at the spalling-floor; 20 of these loads per diem have been raised from shaft B, in which at present it is not advisable to employ a larger force, owing to the circumstances under which these operations are performed. The above return is a satisfactory increase upon the average number obtained per diem during the past month (April)—128.

COMMUNICATION BETWEEN THE TWO EXCAVATIONS.—Last night a space sufficiently large to allow of a person's passage was opened between the stopes in the A and the roof in the B excavation, being adjacent to the second bore-hole that was perforated for facilitating the sinking.

The accomplishment of the completion of this exit will be pushed forward with the view of bringing the B shaft to be more available for the extraction of the mineral.

REDUCTION DEPARTMENT.—The machinery operating in the reduction of mineral has been kept constantly and fully employed in that service, the supply of mineral being sufficient for the mills at work.

PRODUCE FOR MAY.—The gold produce extracted during the month of May amounts to 21,141·6 oits., being derived as follows:—

	Oits.		Tons.		Oits. per ton.
From General mineral	19,585·3	from	2875	=	6·812
Morro Velho arrastres	1161·7				
Praia arrastres	394·6	=	1,556·3	=	·541
Total	21,141·6	,,	2875	=	7·353

Oits.	Ozs. troy.	Tons.	Oits.	Ozs. troy per ton.
or 21,141·6	= 2437·2823,	from 2875	= 7·353	= ·8477

The quantity of mineral treated during the 31 days of the above month exceeds that reduced during April by 366 tons, or as 92 tons is to 83 tons per diem. Notwithstanding the lower gold contents of the ore, as 7·3 oits. is to 8·3 oits., the gold extracted during May is in excess of that in April by 1113·4 oits., or 128·3567 ozs. Troy. The quantity of mineral under treatment may, therefore, be considered as sufficient, though its productiveness for gold had slightly receded.

COST AND PROFIT.

The gold return being	21,141·6 oits.			
Less loss in melting	80·3 ,,			
21,061·3, at 7s. 9d. per oit.		£8161	5	0
Cost, less amount received in reduction of ditto		4517	2	2
Profit on working for month of May		£3644	2	10

The cost is very slightly heavier than it has been in preceding months, consequent upon some extraordinary heavy payments.

Looking at the result, and remembering the lower yield of the mineral during May, the above statement ought to be considered very satisfactory.

GOLD EXTRACTED TO DATE.—During the first division of June, a period of eight days, gold produce amounting to 6246·9 oits. has been extracted, being thus obtained:—

	Oits.		Tons.		Oits. per ton.
From General mineral	5696·5	from	764	=	7·456
Re-treatment	550·4			=	·720
Total	6246·9	,,	764	=	8·176

Oits.	Ozs. troy.	Tons.	Oits.	Ozs. per ton.
or 6246·9	= 720·1655,	from 764	= 8·176	= ·9426

The return shows that the quantity treated per diem has been equal to that of preceding divisions, while it is satisfactory to note that the gold percentage of the mineral has improved by ·823 oits., or ·095 ozs. troy per ton.

The gold troop was dispatched from Morro Velho on June 13, taking nine boxes, containing 27 bars of gold, weighing in all 43,017·4 oitavas=4958·8451 ozs. troy, for shipment per Neva (steamer), for delivery in London.

N.B.—The gold has duly arrived.

DON PEDRO NORTH DEL REY.—Report for May: Produce and cost: Produce, 531 ozs. troy, at 8s. 6d. per oit., 1958*l.* 16s. 6d.; cost, 2743*l.* 14s. 11d.; loss, 784*l.* 18s. 5d.—First division of June: Produce weighed 1000 oits.; remittance, 9958 oits.

ROSSA GRANDE.—Report for May: Produce, 1053 oits., at 8s. 6d., 421*l.* 4s.; cost, 725*l.* 2s. 6d.; loss, 303*l.* 18s. 6d. The total daily average of force has been 143·8. The produce for the month has been obtained from the Bahu Mine, and has amounted to 1053 oitavas of gold derived from 378 tons of ore, equal to 2·78 oits. per ton.

TOLIMA.—Frias: April returns, $12,645·1; April expenses, $9300·3; less improvements, $845·2=$8655·1. Gross profit, 665*l.*=$3990. The total amount of export ore raised, 32 tons 10 cwts. In addition to the report already given of the underground workings, the manager states, in a letter dated May 28, that the prospecting of the alluvial deposit has up to that date produced 42·81 ozs. troy of gold dust, valued at $990, equal to 165*l.* sterling, which is coming forward for realisation in this country. The manager also sends a statement of the cost of obtaining the above gold dust, from which it appeare that the $990 were won by the native process for $213·6, thus leaving a gross profit of $776·2, equal in sterling to 129*l.* 7s. 6d.

BRAZILIAN CONSOLS.—Gold received per Neva 455 oits. This is the second instalment from these promising mines, which adjoin those of the Don Pedro North del Rey, near Marianna, Minas Geraes. When the main lode of "Bugre," or Proviscrio, is reached it is confidently anticipated that for every 10*l.* outlay 200*l.* worth of the precious metal will be raised, the present returns being obtained from about 70 tons of the outlying debris and small leaders. We hope to publish a fuller report in our next issue.

CHONTALES.—The directors have advices from Mr. Smeddle, dated June 5: The heavy floods during the past month have caused a landslipat Estrella, which has closed that mine from the middle of the month, and otherwise lessened the supply and quality of quartz. Mr. Smeddle reports the damage to be nearly repaired, and expects a full supply of quartz for the ensuing month. We have crushed 1619 tons of ore, which produced 224 ozs. of gold, value 630*l.* Cost for the month 650*l.*, which includes 30*l.* expended on removing landslip and timber for housing stamps. The health of the establishment is good.

SIERRA BUTTES.—Result of the working at the Sierra Buttes and Plumas Eureka Mines for June:—Sierra Buttes: Receipts, $45,620; cost of mining and milling, $21,734.—Plumas Eureka: Receipts, $14,064; cost of mining and milling, $11,438.

COLORADO TERRIBLE LODE.—The 41st shipment has arrived in Liverpool per steamship City of Paris, consisting of 9 tons of first-class ore, assaying 480 ozs. of silver to the ton, and valued at 1200*l.*—Monthly Statement for April: Ore raised during the month—First-class, 4½ tons, $2250·00; second-class, 23 tons, $2878·10; third-class, 124 tons, $1488·00; third rock, 75 tons, $750·00; total, $7366·10. Less month's expenses, $5172·92; balance, $2123·18. In addition to the general expenses, the agent has paid for the machinery for the dressing works, amounting to $3490·55.

NEW ROSARIO (Mexico).—M. V. Cumins, June 13: Providencia Mine: Mr. Lonergan, the manager of the new American Reduction Works, says that as soon as all is in perfect working order he will greatly modify his charges, and if we can supply him with 75 to 100 tons of ore a week he will charge only 2*l.* 8s. per ton for reducing them, and will guarantee a return of 75 per cent. of the assay value. Another mill has been erected in El Chico on the principle of M. Von Pateras' process of lixiviation. Senor Parres has tried the process for the Real del Monte Company with the most perfect results. Both he and Mr. Potts think we can erect a reduction works of this description on our own mine for 2000*l.* The stopes continue to look well, and Mr. Potts is sending some samples to his friends in Liverpool. We have broken some extremely rich ores from the San Manuel level. Mr. Potts writes that the Providencia Mine is really first-rate, and that it is the universal opinion of the whole mining community that the Providencia is a great success, and by far the best mine ever opened out in Real del Monte.

EXCHEQUER (Gold and Silver).—Mr. Lewis Chalmers (June 22) writes: The stope has again improved in rising on the north end; 23 tons of ore came to the mill last week, and on Saturday the men in the stope commenced putting in a permanent stull. The lode in the main tunnel is improving daily. When in the mine on Thursday I took from the face of the main tunnel a stone of ore, assaying as follows:—Gold, $5; silver, $211·56: Total, 216·56. I am replacing the air-pipes, and look to this as a valuable acquisition to our mill supply. The Accacia was driven 6 ft. by two men last week. The rock is getting softer as we near the lode. I hope that this will be the source of ore supply No. 3 in a few weeks. Finding that it was impossible for me to work the 100 and 200 levels at the same time with my present hoisting gear, I have ordered another drum, shaft, and standard, and brake gear from the maker in New York, and had a telegram from him that it would be shipped this week. This will save steam, and let me down to the 400, or even 500, if my boilers hold out; one is now working well, the other will be tried to-day. I will then get down to the 200, and commence driving and stoping from that level. This will give me source of ore supply No. 4, and the most reliable of all. During the day or two I am placing the additional drum, &c., I will put the men in the upper tunnel to drive south on the lode from the 700, and two more men north. I have eight men on the dam to-day, and expect to let a contract to cut, haul, and saw 200,000 ft. of mine and other timber this evening.

CAPE COPPER.—Returns for May: Yield from Ookiep, 765 tons of 32 per cent.; Spectakel, 57 tons of 32 per cent., including about 120 tons from the Ookiep, and 15 tons from the Spectakel surface reserves.—Railway traffic for fortnight ending May 16, 93 tons up and 385 tons down.—Bills of Lading Received: 215 tons of ore per Syria, 200 tons of ore per Danube, and 200 tons per Anglian.—Arrivals at Port Nolloth: The Marion, with outward cargo and to load, about 525 tons of ore.—Arrival at Swansea: The Lynwood, with 350 tons of ore.—Sales by Public Ticketing: On June 23, 314 tons of ore, at an average of 15s. 7½d. per unit, realising approximately, 8300*l.*; On July 7, 635 tons of ore, at an average of 15s. 5½d. per unit, realising approximately 16,300*l.*—Put forward for Sale by Public Ticketing: On July 21, 705 tons of of ore and regulus.

MENZENBERG.—R. K. Roskilley, July 14: The ground in Dickin's engine-shaft, sinking below the 34, continues much the same as when reported on last week; good progress has been made here during the week, and its sinking is being pushed on with vigour. The engine and pitwork are working well.

BENSBERG.—C. Craze, July 11: Victoria Shaft: The sump-men are still cutting in at the west end of this shaft, where the lode produces good ore.—New Shaft: In the level east of this shaft we are cutting through the lode, which has a little lead in it, mixed with pyrites. In the level west we have sunk about 7 ft. on the best part of the lode, which is still producing about 4 tons of ore per fathom; but I am sorry to say we have come down to water, which will prevent our going deeper for the present. The level in the south-east end of open-cast is of about the same value as last reported—say, 1½ ton of ore per fathom. No change in other parts of the mine.

AUSTRALIAN MINES.

PORT PHILLIP AND COLONIAL (Gold).—The directors have advices to May 16. Quantity of ore crushed for the four weeks ending April 22, 4189 tons; pyrites treated, 25 tons: total gold obtained, 852 ozs. 18 dwts., or an average per ton of 3 dwts. 22 grs. Receipts, 342*l.* 14s. 4d.; payment (including 63*l.* paid on account of firewood and timber), 336*l.* 9s. 9d.; profit, 62*l.* 4s. 7d., which, added to last month's balance of 224*l.* 6d., made an available balonce of 286*l.* 10s. 7d., which was carried forward to next month's account.

ANGLO-AUSTRALIAN (Gold).—Capt. Raisbeck, May 16: Prospecting Shaft: We have extended north drive 34 ft.; total distance from shaft 100 ft. Have broken and crushed from the drive and stopes 65 tons of stone, yielding 23 ozs. 18 dwts. of retorted gold. Have 20 tons at surface ready for the mill. There is not any change in the stone to report. Tributers have crushed for the month 35 tons, with a result of 55 ozs. 10 dwts. of retorted gold; this included the 5 ozs. of amalgam reported as having been obtained last month. The stone is not looking so well; but as they continue to raise and get nearer the surface on their eastern run of stone the quartz is very changeable. The engine and appliances are in good working order, and I am glad to inform you that we are gradually, if slowly, improving our position.

CENTRAL (Gold).—Mr. Gill, May 19: In my last I stated I had met with some great drawbacks and delays in the completion of the erection of the engine. The saw mills are still closed, and I cannot complete the foundations; I hope, however, to be able to procure sufficient timber by the end of this week. Added to this, the yield from the mine for the past three weeks has been unusually low, and, in consequence, the last remittance of 200*l.* has been absorbed in wages, leaving me absolutely without money. Presuming that these difficulties are satisfactorily conquered, and I am in a position to commence operations, I shall have no funds as a provision against contingencies. The only really safe course I can at present adopt will be to tribute the mine. I can readily get a party of (say) 60 miners together, who will undertake to break and wash dirt on a percentage, the company finding all surface expenses and timber. By this plan, so long as the miners are contented to work, the company will be able to clear all expenses as a rule, and if the ground will only yield the same average as it has done for the past six months, both company and men will be well paid. All responsibility as regards the wages will be ended, and a great deal more work done, as the men will have an interest in the produce of the mine. I should have adopted this plan two months ago had it not been for the unsafe condition of the winding-engine. As regards the value of the wash dirt, and the importance of getting into full work, it will be seen that now two machines only can be washed a-day, at the cost of about 16*l.* per week. When full handed, at an additional cost of about 6*l.*, four can be washed, hence the profit.

SCOTTISH AUSTRALIAN.—The directors have advices from Sydney dated May 15, with reports from the Lambton Colliery to the 11th. The sales of coal for the month of April amounted to 10,516 tons.

RICHMOND CONSOLIDATED MINING COMPANY.

An official circular, just issued, states that the board have declared a dividend of 5s. per share on the fully paid-up shares, and a *pro rata* amount on the partly paid-up shares of the last issue, payable on and after Aug. 14. The unprecedently heavy falls of snow, which continued late into April, prevented the charcoal burners from preparing fuel, and rendered it necessary to shut down the furnaces; it was not until April 22 that the first furnace was started, and the three were not running until June 16. It is a matter for great congratulation that 20 miles of the proposed railway from Palisade Station are open for traffic, and the time occupied in the transit of bullion, charcoal, and coke materially shortened. On the completion of this railway fuel for the furnaces will be supplied at a much cheaper rate, and bearing in mind the enormous quantity required for running three furnaces the importance of this will be readily appreciated. The earnest attention of the directors has been given to promoting economies in every direction, and in effecting improvements generally in raising and smelting the ore. The flue constructed on the suggestion of Mr. Probert for saving the dust blown out of the furnaces has answered beyond expections, about 4 tons a-day of rich mineral is now saved from each furnace. A connection has been recently effected between the great body of ore and the outside hoisting shaft (McGee shaft) at a depth of about 200 ft. below the Lizette Tunnel. The mine is in a most satisfactory condition. A large amount of dead work has been executed during the past few months, the benefits of which will be felt in the future. The greater part of the machinery for the new refining works has been forwarded to Eureka, and on arrival it will be set up as soon as the building for its reception is completed. Mr. Probert arrived there on June 28 to superintend the erection and starting of these works. The directors beg to caution the shareholders against the unfounded and unwarrantable statements circulated from time to time, and trust that those who at any time entertain doubts will apply to the office of the company for authentic information.

EXCHEQUER GOLD AND SILVER MINING COMPANY.—We have been shown by the manager of the Exchequer Mine some splendid specimens of native silver ore taken from the northernmost stope in the north drift from the engine-shaft, in the 100 ft. level, in the old Buckeye No. 2 ground. Also beautiful specimens of ruby silver ore taken on Wednesday last from the top of the stope, also from the face of the main tunnel. Chunks of ruby silver ore, weighing 20 to 40 lbs., are daily taken from the mine. We are satisfied that the Exchequer has a great future before it. Mr. R. W. Raymond, United States Mining Commissioner, proposes to visit some of the principal mining districts on this coast. We hope he will visit Alpine county, which is destined to be one of the best mining districts on this coast. Mr. Raymond is now in San Francisco.—*Alpine Chronicle*, June 20.

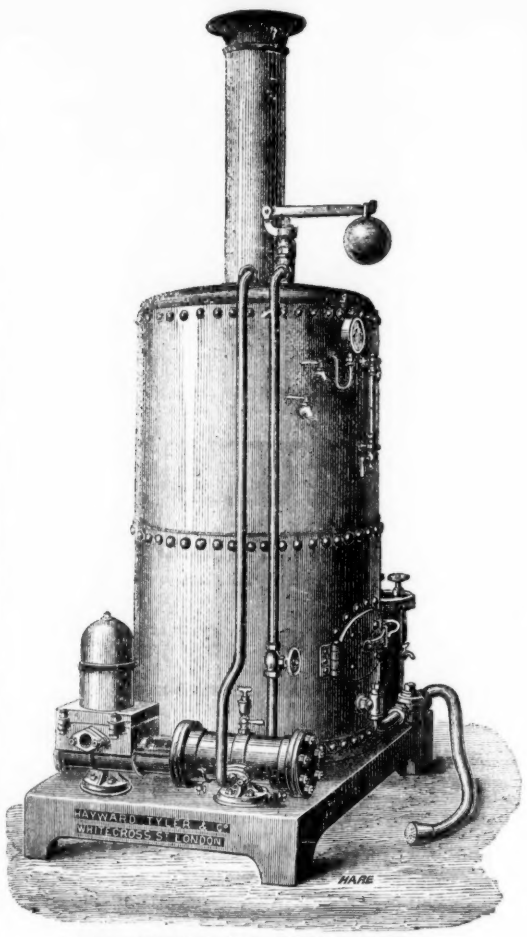
COAL MINING IN RUSSIA.—Coal mining has taken a great development in Russia of late years, and notably with regard to the bituminous coal fields of Ekaterinoslov. At first these were worked in a very primitive and unscientific fashion, but latterly this has been improved, capital having been introduced into the work. For household use it may be noticed that the bituminous coal is not liked in South Russia, where it is chiefly produced, and anthracite alone is burnt. The extent of the coal fields in the Government of Ekaterinoslov and the Cossack territory cannot be exactly stated, but it is estimated that there are about 30,000 square miles of land, containing very rich seams of bituminous coal, anthracite, and half-anthracite. In one estate in this district two shafts have been examined, one has been sunk 60 yards in depth, and the other 120. Six different varieties of coal were found—from coking coal to steam and superior household. The good seams commence at a depth of about 180 ft. from the surface, while the greatest depth to which borings have as yet been made is about 500 ft. At some parts coal is found close to the surface, but the quality of such coal is not good, whereas at 200 ft. from the surface a good steam coal is found, burning with a bright flame, and giving little slag.

HAYWARD TYLER & CO.,

ENGINEERS,

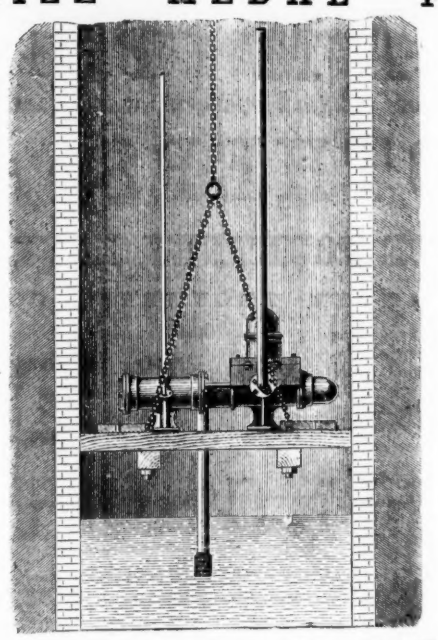
WERE AWARDED FOR THESE PUMPS FOR DEEP MINING AND OTHER PURPOSES,

THE GRAND PRIZE MEDAL FOR PROGRESS.



THE "UNIVERSAL," WITH BOILER.

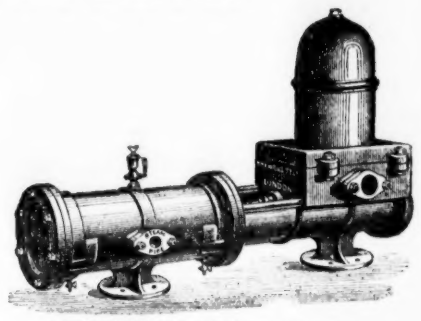
"Important to buyers of this Steam Pump is a specimen of one of the steam valves, shown after working for more than two years. It is without any wear, without even a scratch, and the marks of the tool can be seen."—*Engineer*, Dec. 13, 1872.



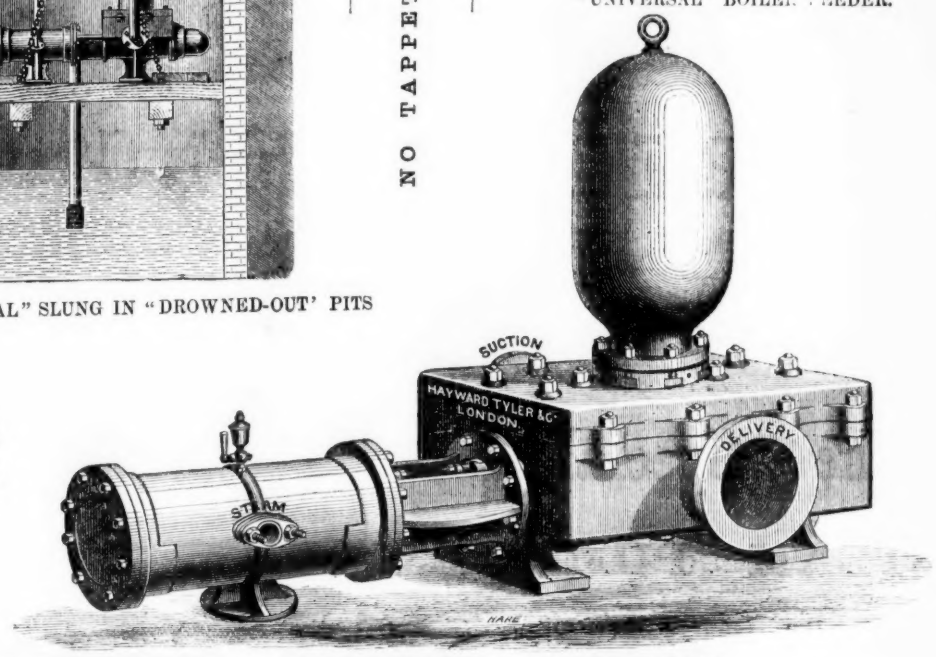
SHOWING THE "UNIVERSAL" SLUNG IN "DROWNED-OUT' PITS

"It is a fact that, although there are a variety of Direct-acting Steam Pumps in the Exhibition, none that we have noticed works so quietly."—*Engineer*, Aug. 1, 1873.

NO TAPPET VALVES.



"UNIVERSAL" BOILER FEEDER.



84 and 85, UPPER WHITECROSS STREET, LONDON.

CHARLES PRICE AND CO.'S

PATENT RANGOON ENGINE OIL.

THIS OIL is suitable to every kind of Machinery; it is used almost exclusively in Her Majesty's Dockyards and Fleet, and by the War Office and East India Government; as well as by the Royal Mail Steam Packet Co., Pacific Steam Navigation Co., P. and O. Co., Cunard Co., and by most of the other important Royal Mail Steam Fleets in the kingdom. It is also extensively employed on the various railways, and by many of the leading engineering and manufacturing firms at home and abroad. "Chemical Laboratory, 7, Printing House-square, Blackfriars, April, 1869.

"I hereby certify that the Rangoon Engine Oil, manufactured by Messrs. Chas. Price and Co., is free from any material which can produce corrosion of the metal work of machinery. It is calculated, indeed, to protect metallic surfaces from oxidation, and, from its peculiar character, is not liable to lead to spontaneous combustion of cotton waste or any similar material which might become imbued with it, as is the case with Rape, Gallipoli, and Olive Oils. The lubricating power of this oil is equal to Sperm or Lard Oil

T. W. KEATES, F.C.S., &c., &c., Consulting Chemist to the Board of Works"

Extract from Mr. BAXTER'S Speech in the House of Commons, May 31st, 1870:—

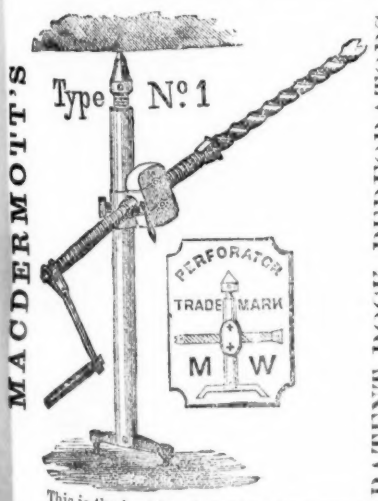
Chas. Price and Co.'s Rangoon Oil—"a vastly superior article" (speaking of Gallipoli Oil at £72 per ton)—"was obtained for from £40 to £45 per ton."

Every parcel of the Oil sent from the Works bears the Trade Mark of the Firm, and as many spurious imitations of the Rangoon Engine Oil are sold purchasers are requested to observe that none is genuine which does not bear this mark.

Oil, Tallow, and Colour Merchants, Seed Crushers, Turpentine Distillers, &c.

London: CASTLE BAYNARD, UPPER THAMES STREET, & MILLWALL. POPLAR.—Works: ERITH, KENT.

MACDERMOTT'S



PATENT ROCK PERFORATORS.

APPARATUS FOR

BORING ROCK, SLATE, SHALE, COAL, &c.

M. MACDERMOTT,

Sole Proprietor,

(LATE MACDERMOTT AND WILLIAMS),

SCOTT'S CHAMBERS, PUDDING LANE, E.C.

This is the best hand-worked implement for colliery purposes extant. It can be carried about, set up, taken down, and worked by one man. It bores vertically upward as well as in any other direction. The rate of work is at least four times as great as by the usual methods. The hole made is straight and uniform, and, therefore, specially adapted for the use of cartridges.

Price list and description, with list of places where the Perforators are in use, on application as above.

A Special Type for Overground Work and Shaft Sinking.

THE IRON AND COAL TRADES' REVIEW:
ROYAL EXCHANGE, MIDDLESBOROUGH.

The IRON AND COAL TRADES' REVIEW is extensively circulated amongst the Iron Producers, Manufacturers, and Consumers, Coalowners, &c., in all the iron and coal districts. It is, therefore, one of the leading organs for advertising every description of Iron Manufactures, Machinery, New Inventions, and all matters relating to the Iron, Coal, Hardware, Engineering, and Metal Trades in general.

Offices of the Review: Middlesborough-on-Tees (Royal Exchange); London, 11 and 12, Red Lion-court, Fleet-street; Newcastle-on-Tyne (50, Grey-street).

M'TEAR AND CO.'S CIRCULAR ROOFING FELT,

FOR

GREAT ECONOMY

AND

CLEAR WIDE SPACE.

For particulars, estimates, and plans, address,—

M'TEAR & CO.,

ST. BENET CHAMBERS,

FENCHURCH STREET,

LONDON, E.C.;

4, PORTLAND STREET,

MANCHESTER;

OR

CORPORATION STREET,

BELFAST.

The above drawing shows the construction of this cheap and handsome roof, now much used for covering factories, stores, sheds farm buildings, &c., the principal of which are double bow and string girders of best pine timber, sheeted with ½ in. boards, supported on the girders by purlins running longitudinally, the whole being covered with patent waterproof roofing felt. These roofs so combine light ness with strength that they can be constructed up to 100 ft. span without centre supports, thus not only affording a clear wide space, but effecting a great saving both in the cost of roof and uprights.

They can be made with or without top-lights, ventilators, &c. Felt roofs of any description executed in accordance with plans. Prices for plain roofs from 30s. to 0s. per square, according to span, size, and situation.

Manufacturers of PATENT FELTED SHEATHING, for covering ships' bottoms under copper or zinc.

INODOROUS FELT for lining damp walls and under floor cloths.

DRY HAIR FELT, for deadening sound and for covering steam pipes, thereby saving 25 per cent. in fuel by preventing the radiation of heat.

PATENT ASPHALTE ROOFING FELT, price 1d. per square foot.

Wholesale buyers and exporters allowed liberal discounts.

PATENT ROOFING VARNISH, in boxes from 3 gallons to any quantity required 8d. per gallon.

THE NEWCASTLE DAILY CHRONICLE
(ESTABLISHED 1764.)
THE DAILY CHRONICLE AND NORTHERN COUNTIES ADVERTISER
Offices, Westgate-road, Newcastle-upon-Tyne; 80, Howard street, North Shields; 195, High-street, Sunderland.

S. OWENS AND CO.,

Hydraulic and General Engineers,

WHITEFRIARS STREET, FLEET STREET, LONDON

AND AT

195, BUCHANAN STREET, GLASGOW (W. HUME, AGENT).

MANUFACTURERS OF

BORING TOOLS, for testing ground for Minerals. Bridge foundations, Artesian Wells, &c., to any depth.

No. 26.—Treble Barrel and other Deep Well Pumps.
No. 136.—Vertical and other Portable Steam Engines.
No. 185.—Horizontal and Vertical Steam Pumping Engines.
No. 112.—Single and Double-purchase Crab Winches.
No. 108.—Pulley Blocks of all sizes.
No. 123.—Bottle and other Lifting Jacks.
No. 94.—Double-barrel Pumps, for Mine or Quarry use.
No. 44.—Portable Wrought-iron Pumps, ditto ditto
No. 102.—Bernay's Patent Centrifugal Pumps, of all sizes.

ALSO EVERY OTHER DESCRIPTION OF

HYDRAULIC AND GENERAL MACHINERY,

COMPRISING

TURBINES, WATER WHEELS, WIND ENGINES, THE HYDRAULIC RAM, FIRE ENGINES, &c.

Catalogues and Estimates on application.

Now ready, price 3s., by post 3s. 3d., Fifth Edition; Fifteenth Thousand Copies, much improved, and enlarged to nearly 300 pages.

HOPTON'S CONVERSATIONS ON MINES, between Father and Son. The additions to the work are near 80 pages of useful information, principally questions and answers, with a view to assist applicants intending to pass an examination as mine managers, together with tables, rules of measurement, and other information on the moving and propelling power of ventilation, a subject which has caused so much controversy.

The following few testimonials, out of hundreds in Mr. Hopton's possession, speak to the value of the work:—

"The book cannot fail to be well received by all connected with collieries."—*Mining Journal.*

"Such a work, well understood by miners, would do more to prevent colliery accidents than an army of inspectors."—*Colliery Guardian.*

"Its contents are really valuable to the miners of this country."—*Miners' Conference.*

"I have works priced £4 that do not contain the same information."—W. W. KENRICK, Colliery Viewer.

"The work is replete on the subject of underground management."—M. BANKES, Colliery Proprietor.

"I have had 20 years' management. It is the best work I ever read, and deserves to be circulated in every colliery district."—JOS. EAMES.

"900 copies have been ordered in Wigan alone, and this is but a tithe of those to whom the book should commend itself."—*Wigan Examiner.*

To be had on application at the MINING JOURNAL Office, 26, Fleet-street, London

VIENNA EXHIBITION, 1873.

THE HIGHEST PRIZE
AND ONLY MEDAL "FOR PROGRESS"
FOR DIRECT-ACTING

STEAM PUMPS,

FOR GENERAL PURPOSES, WAS AWARDED TO

TANGYE BROTHERS AND HOLMAN,

10, LAURENCE POUNTNEY LANE, LONDON, E.C.,

AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO,

FOR

"THE SPECIAL"
DIRECT-ACTING STEAM PUMP.

NEARLY 4000

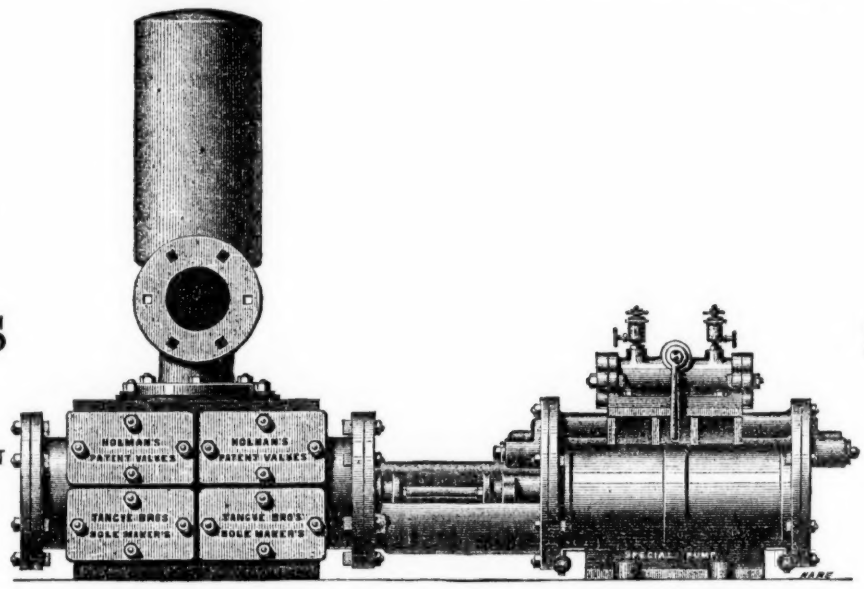
OF

The "Special"

STEAM PUMPS

HAVE BEEN SOLD

INCE THEIR INTRODUCTION IN 1867.



200 SIZES

And combinations of

The "Special"

STEAM PUMPS

ARE NOW

MADE FOR EVERY VARIETY

OF PURPOSE.

GREAT REDUCTION IN PRICES.

The following sizes are suitable for low and medium lifts:—

Diameter of Steam Cylinder ....Inches	3	4	4	4	5	5	5	6	6	6	6	7	7	7	7	7	8	8
Diameter of Water Cylinder ....Inches	1½	2	3	4	3	4	5	3	4	5	6	3	4	5	6	7	4	5
Length of Stroke ....Inches	9	9	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Gallons per hour	680	815	1830	3250	1830	3250	5070	1830	3250	5070	7330	1830	3250	5070	7330	9750	3250	5070
Price ....£	**16**	**18**	**20**	**25**	**22 10**	**27 10**	**32 10**	**25**	**30**	**35**	**40**	**30**	**35**	**40**	**45**	**50**	**40**	**45**

CONTINUED.

Diameter of Steam Cylinder....Inches	8	8	8	9	9	9	9	9	10	10	10	10	10	10	12	12	12	12
Diameter of Water Cylinder....Inches	6	7	8	5	6	7	8	9	5	6	7	8	9	10	6	7	8	9
Length of Stroke....Inches	12	12	18	12	12	12	18	24	12	12	12	18	24	24	18	18	18	24
Gallons per hour	7330	9750	13,000	5070	7330	9750	13,000	16,519	5070	7330	9750	13,000	16,519	20,000	7330	9750	13,000	16,519
Price ....£	**50**	**55**	**65**	**50**	**55**	**60**	**70**	**85**	**55**	**60**	**65**	**75**	**90**	**100**	**75**	**80**	**85**	**110**

CONTINUED.

Diameter of Steam Cylinder....Inches	12	12	14	14	14	14	14	14	16	16	16	16	16	18	18	18	18	
Diameter of Water Cylinder....Inches	10	12	7	8	9	10	12	14	8	9	10	12	14	9	10	12	14	
Length of Stroke....Inches	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	
Gallons per hour....	20,000	30,000	9750	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000	16,519	20,000	30,000	40,000	
Price ....£	**120**	**140**	**110**	**120**	**130**	**140**	**160**	**180**	**140**	**150**	**160**	**180**	**200**	**190**	**200**	**220**	**240**	

Intending purchasers are particularly requested to observe the great length of stroke of these pumps as compared with the short stroke of pumps of other makers, as the durability of the machine depends greatly upon this.

ALL THE ABOVE PUMPS ARE FITTED WITH HOLMAN'S PATENT VALVES.

The "Special" Steam Pumps can be worked by Compressed Air as well as by Steam.

MANY HUNDREDS of the PUMPS are being USED for HIGH LIFTS IN MINES, for which purpose they are made with 21, 24, 26, 28, 30, and 32-inch Steam Cylinders, and 36, 48, and 72-inch Strokes.——Prices and further particulars of these given on application.

NEW PATENT CONDENSERS,

Greatly increasing the efficiency and economy of the "Special" Steam Pumps can be supplied with any size.

Agents at Newcastle-on-Tyne: Tangye Brothers & Rake, St. Nicholas-buildings.

ECONOMICAL STEAM POWER GUARANTEED.

THE GENERAL ENGINE & BOILER CO.

ESTIMATES ON APPLICATION AT 8, UNION COURT, OLD BROAD STREET, LONDON, E.C.

ELLIS LEVER & CO.,

ORIGINAL MANUFACTURERS OF

FLEXIBLE AIR TUBING AND BRATTICE CLOTH,

FOR THE

VENTILATION OF MINES.

WEST GORTON WORKS,

AND 107, PICCADILLY, MANCHESTER.

TWO GRAND MEDALS for PROGRESS

AT THE

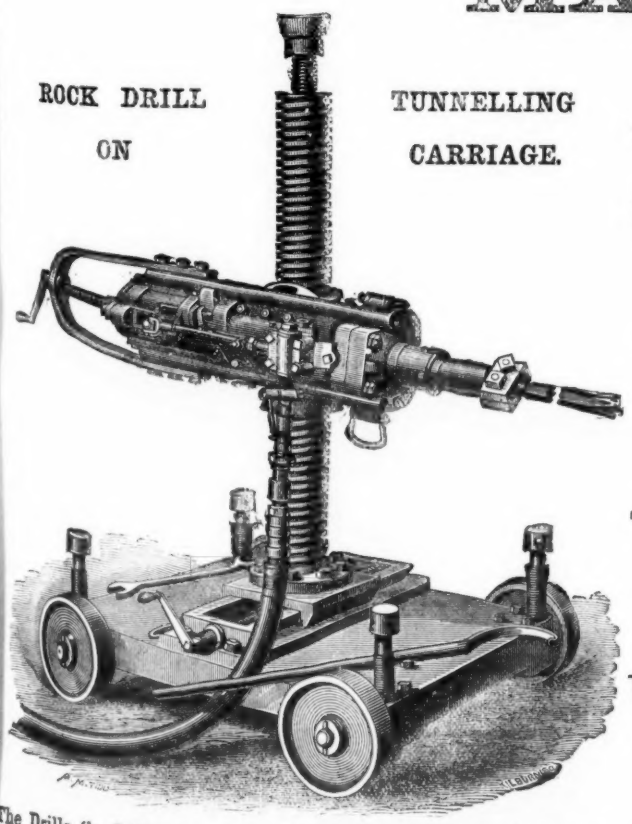
VIENNA EXHIBITION

AWARDED TO

THE "BURLEIGH"

ROCK DRILLING AND AIR COMPRESSING MACHINERY.

ROCK DRILL ON TUNNELLING CARRIAGE.



The Drills (in 5 Sizes) can be Mounted on any Description of Carriage or Support, according to the Nature of the Work.

ALSO

Two Silver Medals, Highland and Agricultural Society of Scotland, 1873.

Three Silver Medals, Manchester and Liverpool Agricultural Society, 1873.

References to Users in all parts of the World.

Adapted for Mining, Quarrying, Tunnelling, Shaft-Sinking, &c.

NEW ILLUSTRATED CATALOGUES, PRICE LISTS, and ESTIMATES, and every Information, POST FREE, On application to the Patentees and Sole Proprietors,

THOMAS BROWN & CO.

96, Newgate Street, London.

Sole Agents—

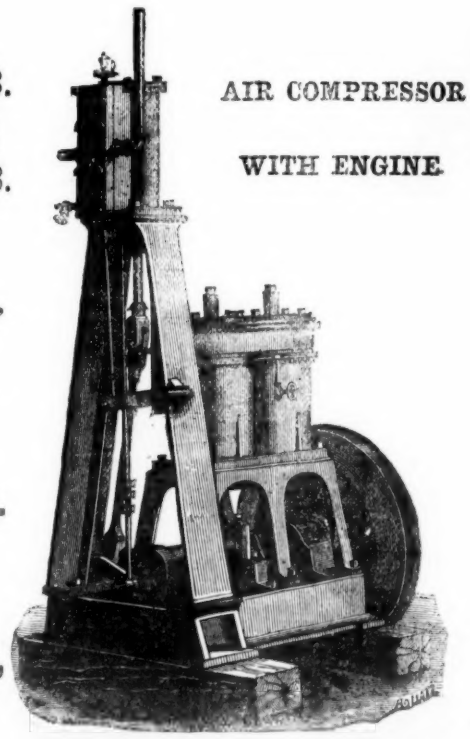
WILSON, McLAY & CO., 2, Talbot Court, LONDON, and

87, St. Vincent Street, Glasgow.

Sole Makers—

CRAVEN BROTHERS, MANCHESTER.

AIR COMPRESSOR WITH ENGINE.



Adapted for Driving Rock Drills, Coal-Cutting, Pumping, and Underground Machinery, or where the Motive Power has to be conveyed long distances.

BY ROYAL LETTERS PATENT.

H. R. MARSDEN, BLAKE MACHINE,

ONLY MAKER OF THE WELL-KNOWN

ORE CRUSHERS, WITH THE NEW PATENT CUBING JAW.

Has received 45 First-class Gold and Silver Medals.

950 NOW IN USE.

ALSO,

NEW Patent EMERY CRUSHERS,
CEMENT CRUSHERS,
MACHINES for making GRAVEL
AND
ROAD METAL.

COPROLITE CRUSHERS,
Small Handpower Machines for Crushing Samples, &c.

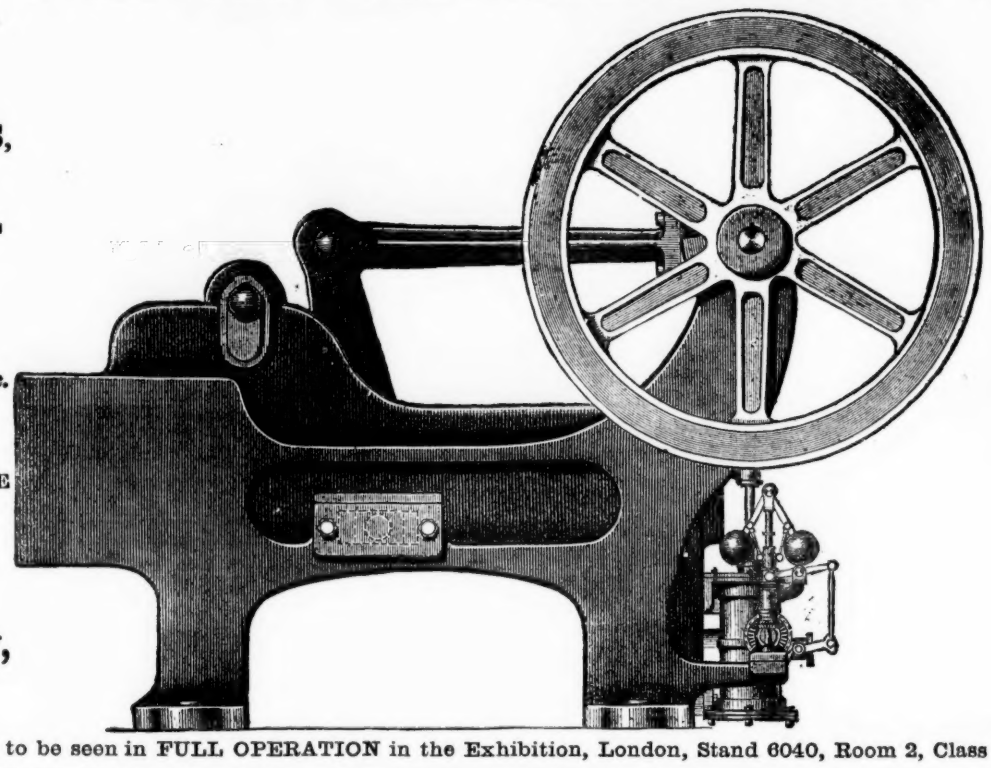
SECURES FIRST-CLASS PRIZE MEDALS WHEREVER EXHIBITED.

ARE IN USE IN ALL PARTS OF THE WORLD. IMMENSE SAVING OF LABOUR.

Users write—"It is a fascination." "A wonder." "Your Ore Crusher is all that we could desire."

For illustrated catalogues, circulars, and testimonials, apply to—

H. R. MARSDEN, Soho Foundry,
LEEDS,
ONLY MAKER IN THE UNITED KINGDOM.



REFERENCES TO ALL PARTS OF THE WORLD.

H. R. M.'s latest improved PATENT MACHINE to be seen in FULL OPERATION in the Exhibition, London, Stand 6040, Room 2, Class 14, West Side.

CASARTELLI'S
CELEBRATED TRANSIT CIRCUMFERENTOR,
Or MINERS' DIAL; the best in use.

DICKINSON'S ANEMOMETER;
A simple portable instrument. Requires no timing.

CHAINS, TAPES, SCALES, PROTRACTORS,
DRAWING INSTRUMENTS, STEAM GAUGES, &c., all of first-rate quality. Catalogues on application.

JOSEPH CASARTELLI,
MANUFACTURER OF
ENGINEERING,
MINING AND SURVEYING INSTRUMENTS,
43, MARKET STREET,
MANCHESTER.

HEPBURN'S
PUMP LEATHER
WATERPROOF

By a special method of preparation, this leather is made solid, perfectly close in texture, and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made It may be had of all dealers in leather, and of—

I. AND T. HEPBURN AND SONS,
TANNERS AND CURRIERS, LEATHER MILLBAND AND HOSE PIPE MANUFACTURERS,
LONG LANE, SOUTHWARK, LONDON
Prize Medals, 1851, 1855, 1862, for
MILL BANDS, HOSE, AND LEATHER FOR MACHINERY PURPOSES.

THE GREAT ADVERTISING MEDIUM FOR WALES.

THE SOUTH WALES EVENING TELEGRAM
(DAILY), and
SOUTH WALES GAZETTE
(WEEKLY), established 1857,
The largest and most widely circulated papers in Monmouthshire and South Wales
CHIEF OFFICES—NEWPORT, MON.; and at CARDIFF.

The "Evening Telegram" is published daily, the first edition at Three P.M., the second edition at Five P.M. On Friday, the "Telegram" is combined with the "South Wales Weekly Gazette," and advertisements ordered for not less than six consecutive insertions will be inserted at an uniform charge in both papers.
P. O. O. and cheques payable to Henry Russell Evans, 14, Commercial-street Newport, Monmouthshire.

COAL-CUTTING MACHINERY.

W. and S. FIRTH undertake to CUT, economically, the hardest CANNEL, ANTHRACITE, SHALE, or ORDINARY COAL, ANY DEPTH, UP TO FIVE FEET.

Apply,— **16, YORK PLACE, LEEDS.**

J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),
Manufacturers of

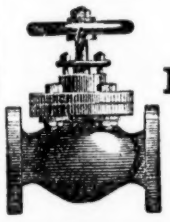
CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES and FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS, RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.
Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.
STOURBRIDGE FIRE BRICKS AND CLAY.

ARTESIAN BORINGS,

For WATER SUPPLY to TOWNS, LAND IRRIGATION, and MINERAL EXPLORATIONS, may be executed of any diameter, from 6 in. to 36 in., and to any depth to 2000 ft.,

Pistons & Air-pump Buckets fitted with Patent Elastic Metallic Packing
of which upwards of 7500 have been made to March, 1874.



MATHER AND PLATT,
MAKERS OF LARGE PUMPS AND PUMPING ENGINES.
Improved Valves and Taps for Water, Steam, Gas, &c.
PATENT STEAM EARTH-BORING MACHINE.
ENGINEERS and MACHINE MAKERS to CALICO PRINTERS, BLEACHERS, DYERS, and FINISHERS.
SALFORD IRONWORKS, MANCHESTER.
PRICES AND PARTICULARS ON APPLICATION.

SAVING LIFE IN MINES—DENAYROUZE PATENTS.

Gold Medal Exhibition of Paris, 1867. Gold Medal (First Prize of Merit) Exhibition of Vienna, 1873.

THE AËROPHORE,

MINING APPARATUS FOR WORKING IN DELETERIOUS GASES
R. APPLEGARTH,
63, Queen-street, Cannon-street, London, E.C.; and at 3, Boulevard Voltaire, Paris.
DESCRIPTIVE CATALOGUES SENT ON APPLICATION.

MANUFACTORY:
RAILWAY WORKS,
HUNSLET ROAD
LEEDS.

ESTABLISHED 1844.

WHITLEY PARTNERS, LIMITED,

ENGINEERS,
FOUNDERS, AND LICENSEES.

CONTRACTORS TO THE
Lords Commissioners of the Admiralty, the War Department, also the various
European and Colonial Governments and Corporations.

ILLUSTRATED CATALOGUES AND PRICES ON APPLICATION.
ORDERS AND INDENTS EXECUTED WITH DISPATCH.
Correspondence in English, French, German, and Spanish.

HEAD OFFICES AND WAREHOUSES
ALBERT BUILDINGS,
MANSION HOUSE, CITY,
LONDON, E.C.

Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors), at their office, 26, FLEET STREET, E.C., where all communications are requested to be addressed.—July 18, 1874.